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The Alcohol-Formalin Solution has passed tests where water-formalin solution and other water solutions have frequently failed, because they do not always penetrate sealed larvae. Water will not penetrate propolis.

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Since a dependable disinfectant is available, the beekeeper can go ahead and spend all the time and pains necessary to equip his apiary with the most perfect combs he knows how to produce, with the assurance that he will not be obliged to melt them up in a year or two on account of infection with American foul brood. The mere satisfaction that this assurance gives is worthy of consideration.

PATENTED OCTOBER 14, 1924

This patent covers ALL solutions containing formalin, together with any volatile vehicle, including water.

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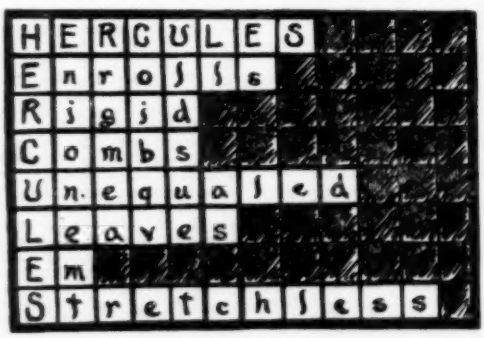
"PERFECT COMBS WITHOUT ADDITIONAL COST"

The Hercules Non-Sagging Foundation solves your biggest problem. Made by a new process, perfected by Mr. Clifford F. Muth, it makes the combs stretchless, yet readily acceptable to the bees. It will not sag—and you can buy it at the price of regular foundation.

Twenty of the largest beekeepers tested Hercules Non-Sagging Foundation during the summer of 1925. Their unanimous verdict is, "Wonderful!" Mr. Jasper Knight, the well-known queen-breeder, says: "Want to let you know I used the 200 lbs. sag-proof foundation and to my surprise I do believe it is 100 per cent stretchless. More power to you. You are on the right track.—Jasper Knight."

Solution to Last Month's Crossword Puzzle



The frames should be wired the usual way. This Hercules Foundation looks like the regular medium brood foundation, but when you handle it, instead of bending like tissue paper, it stands out like cardboard.

The delicate odor is there. The original strength of the beeswax is not destroyed, as the beeswax is filtered through a quarter inch of paper, taking all the dirt and foreign particles from the wax and even including the moisture.

The melting-point of ordinary foundation is about 149 degrees Fahrenheit. Hercules Foundation is made at 167 degrees, or 18 degrees higher. This is accomplished by adding a very small per cent of pure vegetable wax to the already pure hard filtered beeswax.

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THE FRED W. MUTH CO.

Pearl and Walnut Sts. Cincinnati, Ohio

HONEY MARKETS

U. S. GOVERNMENT REPORT

Information from Producing Areas (first half of January)

CALIFORNIA POINTS: Southern California—Recent reports from the orange belt indicate a wide range in the rainfall in different sections. Some areas report normal rains or above, with black and button sages, alfilaria, sumac, and wild buckthorn blooming, and some oranges already in flower; others state that rainfall has been below normal. Although a fairly good crop from sage and buckwheat is looked for, prospects for a good orange flow are considered doubtful, as frosts may kill the early buds, in which case the trees would bloom very late. Bees are beginning to breed. In San Diego County there has been little rain recently, and deep-rooted plants are said to be in need of moisture. Manzanita has been in bloom, but the weather has prevented bees from working much on it. Dry east winds prevail. An early honey season is generally anticipated, but if it should be late many colonies will require feeding. Rains in the Imperial Valley have been insufficient to insure a flow from desert flowers. The warm weather encourages a good deal of flying, and in consequence stores are being consumed rapidly. Little honey remains unsold in the hands of beekeepers. Ton lot sales of light amber buckwheat reported at 12½c per lb.; white orange, ton lots, 11½-13c; 60s, 15c per lb. The small remaining lots of orange honey are generally held for sale at retail at 15-16c per lb. Beeswax is steady, with sales reported at 34-37c per lb. Sales of white comb reported at $7.50 per case. Central California—A slightly better demand is reported for white sage. Inquiry for beeswax is good, with prices advancing. Dealers offer 36-38c per lb. for wax. Ton lot white extracted reported sold at 15c per lb. Northern California—The weather has been foggy and unusually cold. Demand for honey reported slow. Ton lots light amber thistle reported sold at 7¼c per lb., and a ton of white thistle in small pails at 10½c per lb. Beeswax has sold at 35c per lb. cash, 36c in trade.

PACIFIC NORTHWEST—The winter has been very mild, with bees flying every few days. There has been some rain, but little snow, even in the mountains. During the past two weeks much cloudy and foggy weather reported. Bees are wintering well. Demand for honey has been slow, and the market for white to light amber alfalfa continues around 10c per lb. Carlot reported held for that price. Small pails have sold at 11½-12½c per lb.

INTERMOUNTAIN REGION—The winter continues to be comparatively mild, especially in protected valleys, although there have been few flight days recently. Some areas report little snow, and serious water shortage, with consequent reduction in the pasturage, is anticipated unless moisture falls soon. Other sections report ample snowfall. Little buying interest evident during the past few weeks, and only a few sales have been reported. Many small beekeepers are completely sold out, but carload producers are still well-stocked. Two cars white sweet clover and alfalfa extracted reported sold for 8½c per lb.; 1 car water white, 9c; ton lots white, 8½-9c; 60s, 9-12½c; small pails, mostly 12-15c, some lower. One car sweet clover comb, fancy and choice mixed, reported sold at $3.25 per case; case lots white comb, $3.75-4.50 per case. Beeswax has sold well at 35c per lb. cash, 37c in trade, and some dealers are reported offering more.

TEXAS—In central and west Texas extremely cold weather late in December killed many honey plants, and weakened colonies not well provided with stores. More recently good rains have fallen which have started horsemint, and other honey plants should soon be through the ground. Bees brooded late, and are generally short of stores. In northeast Texas bees are reported in good condition, with ample stores. Prospects are good for a satisfactory crop from horsemint and sweet clover. In fact, for the state as a whole, there is a good season "in the ground."

PLAINS AREA—The weather has been generally cold, but bees outdoors are wintering quietly, and flights early in the month were reported from Iowa and Kansas. The outlook for 1926 continues favorable, but more snow is needed to protect clovers. Honey is moving slowly. Price cutters are generally cleaning up, but those maintaining prices still have considerable honey on hand. Few ton lot sales white clover reported at 10½-11c per lb. No. 1 white clover comb has been selling at $4.00-4.75 per case; No. 2, $3.75 per case.

EAST CENTRAL AND NORTH CENTRAL STATES—Bees are wintering quietly, both outside and in cellars. Judging from the present condition of bees and plants, the 1926 crop should be above normal. Honey from price-cutters continues to flood the market in some sections, but often this honey is said to be below grade. Commercial beekeepers are generally holding for better prices. So much honey was sold by beekeepers direct to consumers that bottlers are finding a slow local sale for their goods, and in consequence are not buying in as great volume as usual. From half to three-quarters of the crop has been sold, depending on the locality, and in some sections beekeepers are well cleaned up. Four car loads of white clover extracted are reported to have sold recently at 10c per lb.; ton lots or smaller, 9-12c; small pails, 10-18c per lb.; dark, 60s, 9-10c; small pails, 10c per lb; No. 1 white clover has sold at $4.50-5.25 per case; No. 1 buckwheat, $3.90 per case. There is a good demand for beeswax, and the price is steady. For average yellow 30-35c per lb. has been paid, and for very light colored stock, 45c per lb.

NORTHEASTERN STATES — Bees are wintering well. In Pennsylvania and the Hudson River Valley of New York flights were reported early in the month. In parts of western New York the 1926 clover prospects were injured by drouth last spring, but elsewhere the outlook is good. Clovers are well protected by recent heavy snowfall. Demand for honey in general shows an improvement. One reporter states that he has found sales of honey the best of any year since the war, especially for small pails. Some areas are already well cleaned up of extracted clover. White comb is moving well, and supplies are getting short. Buckwheat in small pails is selling fairly well; but much buckwheat extracted and large supplies of buckwheat comb are still available. White clover has sold in ton lots at mostly 9-11c; 60s, 12-13c; few 15c; small pails, 14-18c per lb; white clover and basswood, ton lots, 11c; small pails, 16c per lb.; buckwheat, ton lots, 7½-9c; smaller lots, 10c; small pails, 9-12c; some low as 8c, and few 13-16c per lb. No. 1 white clover comb has sold at mostly $4.00-4.50; few, $3.50, and few up to $6.50; No. 2, $2.80 per case; No. 1 white clover and basswood, $5.00 per case; No. 1 buckwheat comb, $3.00-4.00; fancy, $4.30 per case. Beeswax has sold at 35-40c per lb.

From Producers' Association.

The demand for honey, both domestic and export, has been quiet for the last three or four weeks, as it always is at this time of the year. However, the market is much more active since the first of the year, and we feel sure there will be a steady demand from now on. Wholesalers always like to have stocks down to the minimum at the end of each year and naturally buy very lightly during December. Ontario Honey Producers' Co-op., Ltd.,
Toronto, Can., Jan. 6. A. G. Halstead, Mgr.

Special Foreign Quotations.

LIVERPOOL—The new year has commenced with a steady demand for honey, but we are unable to record much change in values. The equivalent in American currency for good extracted honey works out at 13c per lb. The firm tendency in beeswax, which we advised in our last report, has continued, and sales have been readily made at 43-44c per lb. in American money. Taylor & Co.

Liverpool, Eng., Jan 5.

Honey Producers' Reports.

Early in January we sent the following questions to actual honey producers:

1. What per cent of the honey produced in your locality has already left the hands of the producers?
2. At what price has honey been sold, if any, in large lots (specify if this was in carload or less than carload lots) in your locality during the past month? (a) Extracted honey, per lb.? (b) Comb honey, fancy and No. 1, per case?
3. What are prices when sold to grocers in case lots? (a) Extracted honey in 5-lb. pails, or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy and No. 1, per case?
4. What is the retail price to consumers in your locality? (a) Extracted honey in 5-lb. pails or other retail packages in terms of 5-lb. pails? (b) Comb honey, fancy, and No. 1, per section?
5. How is honey now moving on the market in your locality? Give answer in one word as slow, fair or rapid.
6. What is the condition of the colonies at this time as compared with normal? Give answer in per cent.
7. What is your estimate of the condition of the honey plants for next season as compared with normal? Give answer in per cent.

The following reports were received:

State.	Reported by:	Pct. Sold.	Large lots. Ext.	Comb.	Wholesale. Ext.	Comb.	Retail. Ext.	Comb.	Movement.	Col. Cond.	Plant Cond
Ala.	W. D. Achord	95	$ 09½				$.80		Fair		100
Ala.	J. M. Cutts	95			$.50		.75	$.30	Slow	90	100
Ark.	Jas. Johnson	90			1.00	$6.00	1.25		Slow	50	100
Ark.	J. V. Ormond						1.50	.30	Slow	80	80
Cal.	M. C. Richter	80	.15				1.50		Slow	90	90
Cal.	Geo. Larinan	80	.11				1.00		Slow	100	100
Cal.	M. H. Mendleson	100					1.15	.38	Fair	150	
Cal.	L. L. Andrews	90	.11¾				1.25	.33	Slow	85	60
Cal.	M. A. Saylor	95	.08½	4.00	.70	4.80	.90	.30	Fair	100	100
Col.	B. W. Hopper	95			.65	3.50	.80	.18	Slow	100	100
Col.	J. A. Green	40			.75	3.50	.95	.20	Fair	100	100
Conn.	Allen Latham	75			1.00	6.50	1.25	.38	Fair	100	100
Conn.	A. W. Yates	75			1.00	7.50	1.30	.40	Fair	90	100
Fla.	C. C. Cook	100	.07½		.85		1.10		Rapid	100	100
Fla.	Harry Hewitt	100			.80		1.00		Rapid	80	100
Ida.	J. E. Miller	80	.09½	4.00	.55		.80		Fair	90	100
Ill.	C. F. Bender					4.80		.28	Slow	60	75
Ill.	A. L. Kildow	60	.10	4.00		4.80	.85	.25		100	50
Ind.	Jay Smith	100					1.25	.35	Fair	100	100
Ind.	R. C. Johnson				.90	4.80	1.15	.25	Slow	100	100
Ind.	E. S. Miller				1.00	5.75	1.25	.30	Fair	100	100
Iowa.	E. G. Brown	80	.10		.75	4.50	1.00	.28	Fair	100	90
Iowa.	Frank Coverdale	75			.75	4.80	.90	.25	Fair	90	125
Ky.	P. C. Ward	40			.95		1.25		Slow	50	50
Kans.	J. A. Nininger				.65	4.50	.85	.25	Slow	85	100
La.	E. C. Davis	75	.08		.75		1.00		Fair	100	125
Me.	O. B. Griffith	60			1.25	7.00	1.50	.35	Slow	90	90
Md.	S. G. Crocker, Jr.				1.00	5.75	1.25	.35	Fair	100	
Mich.	Floyd Markham	80	.09		.80	4.50	1.25	.25	Slow	75	100
Mich.	Ira D. Bartlett	95			.75		1.00	.30	Fair	100	100
Mich.	E. D. Townsend	60					.75		Slow	85	85
Minn.	Francis Jager		.09	4.00	.85	4.00	1.10	.28	Fair	80	100
Mo.	J. H. Fisbeck	85			1.00	5.50	1.25	.30	Slow	85	100
Mo.	J. M. Romberger	90		5.00	.90	5.50	1.10	.28	Slow	90	100
Neb.	J. H. Wagner	60	.11	4.00	.65	4.75	1.00	.25	Fair	100	100
Nev.	Geo. G. Schmeis						.75	.30	Slow	100	100
N.J.	E. G. Carr	60					1.25	.35	Fair		80
N.Y.	N. L. Stevens	90			.75		.85		Slow	100	100
N.Y.	Geo. B. Howe				.70		.93	.28	Fair	95	100
N.Y.	Adams & Myers	60			.75	5.50	1.10	.30	Fair	90	50
N.Y.	F. W. Lesser	95	.11				1.00	.30	Fair	100	125
N.C.	C. L. Sams	95			1.00	5.00	1.25	.30	Fair	100	100
N.C.	W. J. Martin		.10	3.00	1.00	4.50	1.50	.30	Fair	100	90
S.C.	E. S. Prevost							.35	Fair	30	75
N.C.	C. S. Baumgarner	100			1.00		1.35	.30	Fair	110	90
Ohio.	R. D. Hiatt	75			1.05	6.00	1.35	.35	Slow	95	90
Ohio.	J. F. Moore	60			.80	4.50	1.10	.25	Slow		80
Ohio.	Fred Leininger	95	.10	4.80	1.00	5.00			Fair	95	25
Okla.	Jos. Heusisen	100					1.35	.35	Fair	75	90
Okla.	C. F. Stiles	100			.90		1.10	.30	Slow	70	70
Ore.	H. A. Scullen				.75	5.50	1.00	.25	Fair	100	
Pa.	D. C. Gilham	30			1.05	7.20	1.40	.40	Slow	95	
Pa.	Harry Beaver	60			.70	3.00	.80	.20	Slow	90	80
Tex.	J. N. Mayes	100								100	100
Vt.	J. E. Crane	87		6.00	1.00	6.50	1.25	.35	Slow	100	100
Va.	T. C. Asher	75			1.05	6.00	1.25	.30	Fair	90	95
Wash.	W. L. Cox	70			.78	5.00	1.00	.30	Fair	100	100
Wash.	G. W. B. Saxton	30			.60		.75		Slow	100	90
W.Va.	W. C. Griffith	100	.12¼	5.00	1.00	5.50	1.25	.34	Slow	75	80
Wis.	N. E. France	75			.75	4.50	1.00	.25	Fair	100	100
Wis.	E. Hassinger	60	.11		.80		1.00		Fair	100	100
Wis.	H. F. Wilson					5.50	1.08	.30	Slow	100	
Wyo.	A. D. Brown	85	.08½			4.50	1.00	.30	Fair	100	105
Wyo.	Chas. H. Ranney		.08½							100	60

FRICTION-TOP PAILS AND CANS

2½-lb. cans—25, $1.30; 50, $2.40; 100, $4.15; 200, $8.25; 500, $20.00; 1000, $39.00.
5-lb. pails—25, $2.00; 50, $3.50; 100, $7.00; 200, $13.75; 500, $33.00; 1000, $64.00.
10-lb. pails—25, $2.90; 50, $5.00; 100, $10.00; 200, $19.75; 500, $48.00; 1000, $94.

GLASSWARE

8-oz.—Per case, $1.05; 10 cases, $10.00; 30 cases, $28.50. 16-oz.—Per case, $1.35; 10 cases, $13; 30 cases, $37. 32-oz.—Per case, $1; 10 cases, $9.50; 30 cases, $27.
A GRADE TIN PASTE—1 pint, 25c; 1 quart, 45c; postage extra.
Beeswax Wanted.

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A. I. ROOT COMPANY OF CHICAGO
224-230 WEST HURON STREET, CHICAGO, ILLINOIS

Wishing All a Happy New Year

At this most joyous time of the year it is our heartiest pleasure to say Happy New Year to one and all. This message carries with it our deepest gratitude for the kind patronage of our many old and new customers during the past year. Our appreciation can best be made known to you through our earnest efforts to give you the best possible service, and may our service this year be the best we have ever known.

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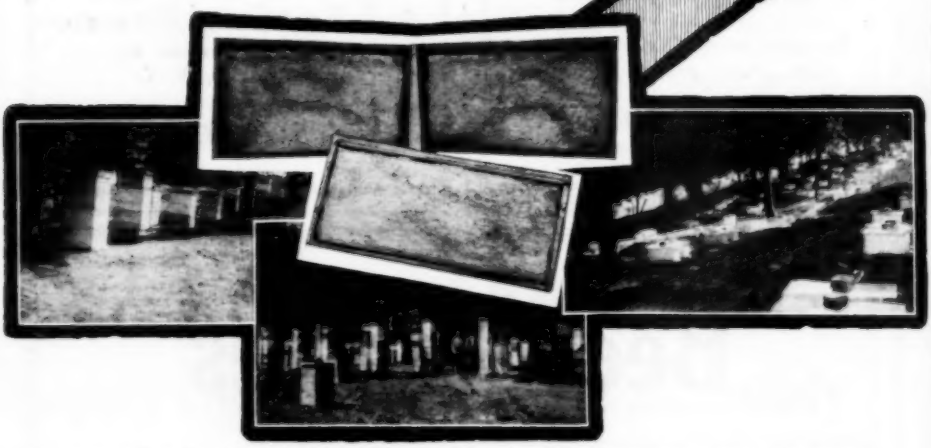

Of all the bee folks I know, David Running has come nearest doing what I would like to do.

He is well off, just from bees. He comes pretty near producing all year long, with bees at Filion, Michigan, and at Sumterville, Alabama. In the meantime he basks awhile in Florida. Can you beat that?

The top left picture is of a queen-rearing and package bee yard in the Running Apiaries in Alabama. At the right, double mating nuclei in the same yard. You lose count in this picture.

Below is one of th honey producing yards at Filion, Michigan. In the center, three of the fine combs Running has secured from Wired Foundation. He has thousands like them.

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DADANT'S WIRED NON SAG FOUNDATION

WE WANT BEESWAX — AND PAY HIGHEST PRICES
Write for Quotations and Shipping Tags

GLEANINGS IN BEE CULTURE
FEBRUARY, 1926

EDITORIAL

OUR CORNERSTONE

REMEMBER at all times that improved bee culture is our end and aim, and we trust no one will hesitate to give any facts from experience because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "introductory" in the first issue of Gleanings in Bee Culture, January 1, 1873.

ONE of the greatest collections of papers on various phases of beekeeping is the report of the VII International Congress of Beekeepers which was held in Quebec, Canada, September 4, 1924. The book contains 500 pages and gives a complete report of the International Congress in both French and English. The report was published primarily for the delegates, but extra copies have been printed which can be obtained by nondelegates by sending $2.25 to Mr. C. Vaillancourt, Department of Agriculture, Quebec, Canada.

Report of the VII International Congress of Beekeepers

ON pages 95 and 96 of this issue Mr. J. L. Byer points out a peculiar condition in Ontario in regard to the efficiency of the alcohol-formalin solution in sterilizing combs containing American foul brood. Just why this solution gives such excellent results in the United States and fails in many cases in Ontario, is difficult to explain unless it is because of a difference in the solution as made in Canada. Before announcing his great discovery, Dr. Hutzelman had experimented for several years in perfecting a solution of alcohol and formalin, which has proved entirely satisfactory on this side of the line; but in Canada this solution is not available and it has been necessary to mix it from materials available there. Whether the failures in Ontario are due to the kind of alcohol or formalin used, or to the process of mixing, should be carefully worked out in order that Canadian beekeepers may have an alcohol-formalin solution which works as well as the Hutzelman solution does in the United States.

The Alcohol-Formalin Solution

AS pointed out on page 11 in the January issue of this journal, if every reader who has worked up a local market for his honey would immediately purchase a few cases or even one case to keep his customers supplied until new honey is available, the 1925 crop would soon be exhausted. While this method of disposing of the nation's honey crop may not be the final solution of the marketing problem, it is a method that is immediately available and one that would quickly dispose of the stocks now in the hands of beekeepers or dealers. Thousands of beekeepers whose crop was short the past season have sold out their entire crop locally, leaving their customers without honey until the new crop is harvested. Those who purchase honey to keep their customers supplied until the new crop comes in are not only stabilizing their local trade in honey, but also helping to bring about better prices and marketing conditions for next season.

Selling the Nation's Honey Crop

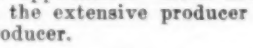
THE Editor has just returned from a trip to portions of the West where he attended meetings of beekeepers in Iowa, Nebraska, Wyoming, Montana, North Dakota, and Minnesota. These states include the larger portion of the great sweet-clover territory in which honey production on a large scale is developing rapidly.

While beekeepers throughout the country have many characteristics in common, such as intense enthusiasm in their work and an eagerness to accumulate as

Beekeeping East and West

much information as possible upon every phase of beekeeping, as well as subjects related to beekeeping, there is a wide difference in the viewpoint in the various sections of the country. In an eastern beekeepers' convention there are, as a rule, but few extensive producers. While there may be a few who produce as much as a car-load or more of honey annually, the majority are producers on a moderate scale, often carrying on honey production in connection with some other work. Even those who produce enough honey to load one or more cars seldom mention honey in car-lots, since it is usually sold without being loaded in cars. At a meeting of western beekeepers the majority may be car-load producers. These men talk in terms of car-loads of honey and measure their crop in that way because most of it is shipped to eastern markets in car-load lots. At the meeting of the Wyoming Beekeepers' Association at Thermopolis, Wyoming, January 7 to 9, nearly every member present produces honey in car-load lots.

As a rule, eastern beekeepers study the bees themselves more intensively than do the western beekeepers and are usually well informed on what has been termed "bee behavior." But in doing so they are inclined to neglect the business phases of the industry. On the other hand, the western beekeeper is intensely interested in the "business" end of bee keeping. He is looking for short cuts in management, whereby he may operate a larger number of colonies, and for methods of reducing his cost of operation in order that his business shall show a profit. In doing this he is inclined to neglect some of the smaller things in "bee behavior" that have a direct practical application to his business. In other words, both eastern and western beekeepers would profit by an interchange of ideas if they could meet each other in greater numbers and talk over their problems. Bee journals are criticised by some for stressing too much the business phases of beekeeping and method for extensive honey production, and by others for publishing too much material on various phases of bee behavior, which the extensive producer may think has no practical application. Both are needed by both the extensive producer and the small producer.



Management in Sweet Clover Localities

THE two outstanding characteristics of a sweet-clover locality are the relative lateness of the beginning of the main honey flow in relation to the building up of the colonies in the spring and the long duration of the honey flow, which in some cases continues until frost. In much of the sweet-clover territory, July and August are the principle honey months.

The long period for building up previous to the honey flow is quite an advantage in the case of building up colonies from package bees purchased from the South. It also makes good wintering less essential than in localities where the honey flow begins a month earlier, thus making it necessary to bring the colonies through winter in good condition in order that they may build up quickly for the earlier honey flow. Many keepers in the sweet-clover and alfalfa region have contended that better results are obtained by what an eastern beekeeper would call poor wintering than by good wintering, since colonies that come through the winter in fine condition build up to profitable strength too early. They point out that colonies that were greatly depleted during the winter are held back in the spring and thus arrive in better condition for the later honey flow. This together with the fact that there are more sunny days in winter than in the East is largely responsible for many bees being wintered without protection in the West.

However, many beekeepers in the sweet-clover region are now giving special attention to good wintering in order to bring the colonies through in the best possible condition, then dividing the colonies six or eight weeks previous to the beginning of the honey flow, making the division as nearly equal as possible and supplying the queenless portion with a young laying queen. In order to have bees and brood of all ages in each division, it is a common practice to move one division to another yard to prevent the older bees from returning to their old location.

When the colonies have wintered well and this division is made at the right time, each division is in better condition to store a large crop of honey than the original colony would have been if left undivided and permitted to pass its peak sometime before the beginning of the honey flow. Some such plan is being adopted more and more by honey producers in the sweet-clover region. When increase is not desired the colonies may be re-united in the fall, thus providing extra strong colonies for winter, and by killing the old queen the colonies are thus requeened annually. Such a plan should not be attempted in regions having an early honey flow, for there would not be time to build up both divisions.

The other characteristic of the sweet-

clover region, the long honey flow, also calls for a modification of management to fit the conditions. The problem of maintaining the strength of the colonies throughout a long honey flow is sometimes a serious one, especially with Italians, and many have worked out special manipulations for doing this.

The Marketing Problem

THE problem of disposing of the rapidly increasing crops of honey produced in the sweet-clover region is one that is uppermost in the minds of the extensive honey producers of the West. The smaller population of the western states makes it necessary for most of the honey to be shipped to eastern markets. However, the per capita consumption of honey in the great honey-producing centers of the West is apparently many times that of the per capita consumption of honey in the East. Large quantities of honey are sold locally to consumers in 5 and 10 pound pails, as well as in 60-pound cans. In fact, the sale of honey in 60-pound cans for household use is quite common in that region when sales are made direct to the consumer, and the great bulk of honey that passes through the hands of local dealers is put up in 5 and 10 pound pails. In North Dakota, where but little honey was consumed only a few years ago, large quantities of honey are now sold locally in this way. In many instances beekeepers who produce less than carload lots report that their crop was put up in 5 and 10 pound pails and sold locally to grocers in small towns. In many instances several hundred pails of honey are displayed in the window of a little country-town grocery in which an eastern beekeeper would hardly think it worth while to attempt to sell any honey. In North Dakota, especially, most of the honey is sold in granulated form, having been packed in the 5 and 10 pound pails by the beekeeper, the honey being run direct from the honey tank into the pails.

Several explanations have been offered as to why more honey per capita is consumed in the Northwest than in the East. Some have attributed this to a lack of an abundance of fruit in this region, while others think that climatic conditions have something to do with the appetite for honey, the theory being advanced in some cases that honey is a heat and energy producer, therefore called for in colder climates. As against this theory stands the stubborn fact that some of our southern states are great consumers of honey as well as other sweets.

No doubt the greatest factor in bringing about quantity consumption of honey in regions of extensive commercial honey production is that everybody knows something about honey. The towns being comparatively small and honey production being one of the industries of the community, everybody has an opportunity to know that honey is available in quantity, and the people soon learn of its good qualities as a food. Of course, the lower price of honey in producing centers that are far from eastern markets also tends to increase consumption, but the fact that a grocery in a small western town is able to sell more honey in 5 and 10 pound pails in one year than a much larger grocery in the East would sell in five years should be a lesson for the eastern beekeeper. The problem of bringing honey to the attention of the consuming public in the East is, of course, more difficult than in the West, where beekeeping is recognized as one of the important industries of the community; but there is no good reason why as much honey per capita should not be consumed in the East as in the great honey-producing states of the West except that honey is not so well known.

The bumper honey crop in Minnesota and Wisconsin the past season has no doubt resulted in doubling or trebling the consumption of honey in those states. The great flood of honey could not help but attract the attention of the public. Honey was offered so freely that it has no doubt been brought to the attention of nearly every one in those states. If there had been some system by which the smaller lots of honey which were dumped on the market at ruinously low prices could have been bought up and properly distributed, no doubt even more honey could have been sold in those states this winter than has already been sold, and this without any price-cutting. Thus, while a bumper honey crop has great possibilities in bringing about publicity for honey, it has its danger of local price depression unless some system is worked out to prevent the dumping of too many small lots at low prices.

A distinct advantage possessed by the honey producer in the great sweet clover region of the Northwest is the remarkable uniformity of his product from year to year. While the crop varies in quantity from season to season, there is less variation in the quality of the honey than in most localities. This makes it possible to load car after car of honey that runs practically uniform in color, body, and flavor, which would be difficult to do in other localities, and which is of great importance in marketing the product.

A SEASON WITH J. L. BYER

By A. A. Werner

System of Management Employed by One of Canada's Most Extensive Honey Producers

[Until recently Mr. J. L. Byer, of Markham, Ontario, operated three groups of apiaries, these groups being widely separated, each group being operated as a unit. In this article Mr. Werner tells about the operation of one of these groups, the other two being operated by others, but all three groups were under Mr. Byer's supervision. By thus operating in different localities the chance of a short crop from all the apiaries is reduced, but it must have kept the boss busy to supervise all three groups. Such a distribution is probably necessary for best results in large-scale operations in many regions unless it is found more profitable to occupy less productive locations near-by.—Editor.]

This is not to be a fish story, nor yet a story of fisherman's luck. It simply explains how Mr. Byer managed his bees to harvest a crop of 82,000 pounds of the finest clover honey from his 410 colonies of bees at Binbrook in 1921.

It is certain that it was not splendid equipment that secured the 40-ton crop. The type of hive he used is locally called the "McEvoy." Its faults are numerous. It has nearly half an inch of bee-space between the ends of the frames and the hive wall. This space the bees frequently filled with burr-combs and honey. The bee-space being below, the lower edge of the super is brought in contact with the projections of the top-bars, resulting in the lower frames often being lifted with the super, and in dropping back the light top-bars are liable to be split and the bees excited. Being approximately a foot in each dimension and only the equivalent of an eight-frame Langstroth super, the hive resembled a New York sky-scraper when the crop was on, and the tins used to close the space at the ends of the top-bars did more to facilitate ventilation than to prevent robbing.

Mr. Byer bought this outfit as it is, but he certainly made the best of it. His son, Edwin, moved with his family and household furnishings to Binbrook to take charge of the outfit. I myself arrived on May 19. I was the hired man in this case, but since I was hired on a sliding-scale basis, and aimed at 100 pounds of honey per colony, I didn't mind doing a few hours overtime. The 410 colonies of bees, in five outyards, are located from one to nine miles from the residence and central extracting plant in the village. They are visited by means of Fords—a touring car and a ton truck.

First Work in the Spring

Unpacking, clipping queens, sorting combs, washing tanks and extractor, and treating six colonies that had American foul brood, took the greater portion of the time between May 19 and June 7. On June 7 we had rain, and so utilized the time rendering some old diseased combs. But the event which caused me to remember June 7 was a visit from

Home of J. L. Byer and headquarters for his extensive operation of apiaries.

the former owner of the bees. I have often thought over what he said that morning. It was something like this:

"Chances don't look very good this year. We are having too much cold and damp weather. We should be getting a honey flow now, with all the bloom there is, but there's not a thing coming in. I have had to feed two or three of my yards. If this weather continues much longer the bees will starve to death."

Effect of Heavy Feeding Previous Fall

Although conditions at that time did not look too favorable, yet I noted that Mr. Byer's bees had required no feeding. They had been given an abundance of feed the previous fall, and they had nearly all of necessity been given a second brood-chamber of dark worker combs, closely spaced to induce the queen to come up and fill them with brood. The dandelion honey flow, during which queens had been clipped, had given them some stimulation; and on June 7, good prospects or poor prospects, Mr. Byer's colonies were strong and in a healthy condition, ready for whatever honey flow might come.

My notes for the remainder of June are as follows: June 9, bees working fine. June 10, bees working hard all day. June 15, most colonies have four stories. June 23, I took off first honey in order to get more super room. Looking over these notes, we see that, once the flow began, the bees were given supers very rapidly, thus giving lots of room early in the season.

Swarm Control

Keeping down swarming made us a great deal of work. Queens had been clipped and room had been given, but this was not sufficient. After June 9, in looking over colonies, we began putting an excluder over each brood-chamber, making sure that the queen was beneath it. It was our aim to look through the brood-chamber every ten days after the excluders had been put on. Because of rain, muddy roads, or lack of empty supers, this was not always possible. But had it been followed to the letter, there would have been no swarming. As it was, there were only about a dozen swarms among the 410 colonies.

In looking through the brood-chambers this is what we did: (1) Look for queen-cells. All queen-cells were pinched off with thumb and finger, or at least mutilated in some way. When there were only eggs in the cells we considered that the colony "morale" did not suffer. The bees would work just as hard as ever after we gave the colony its treatment provided the queen-cells were not too far advanced. (2) When the brood-chamber was fairly well filled with brood we removed three frames of sealed brood, shaking them in front of the hive to make certain that the queen remained below. In place of the three frames of sealed brood we put three good empty dark combs into the brood-chamber, sandwiching them between frames of brood. The excluder was then replaced on the brood-chamber. (3) The three

One of J. L. Byer's apiaries at the beginning of the honey flow.

lightest frames were removed from the top super and the three frames of sealed brood put in their place. If there were queen-cells in the top story from brood previously raised into it these were also cut; for with the poor-fitting supers and bent or missing tins, any virgins emerging would mate and begin to lay in the supers, or a swarm might issue. (4) The combs heaviest with honey were then arranged in the upper supers, while a full super or super and a half with empty combs was always left next to the brood-chamber, a new super of empty combs being given if required.

The reasons for this procedure were: (1) To remove young bees from the brood-nest; (2) to induce, by means of the raised brood, the storing of honey in the upper supers; (3) to give the queen plenty of room in the brood-nest to lay, and (4) to provide room for the storage of honey.

Removing Queen and Leaving Ripe Queen-cell

Sometimes if sealed queen-cells were found a nucleus of three frames would be taken from the colony, and one queen-cell left them to requeen the colony. In other cases, where the swarming fever had been developed, four or five frames of brood might be raised. Occasionally the old queen was killed, and only one of the queen-cells left.

If, on the other hand, the colony was weak, no brood would be raised, and probably no more room given. It was the rule to leave weak colonies packed until the main honey flow. In some cases this advantage of additional heat enabled them to catch up in strength with the stronger ones.

Supply of Supers Exhausted

For the 410 colonies we had only 1100 supers, an average of 2¾ supers for each colony. These proved to be far too few, and although we extracted honey just as soon as we dared, we could not work fast enough to keep the bees supplied with room. All the foundation, some 400 pounds, and all empty supers, disappeared in a short time after the need for more room became apparent. The foundation was fully drawn, it seemed, in no time. The supers and foundation both being of odd-size, it was impossible to have a rush order filled by any supply house. So we kept on with our system of extracting and returning wet combs, just as fast as the girls in the extracting plant could empty them.

Each time we went to the yards the supers were plugged with honey. After using all the supers that had been emptied we would go home with our load of honey, lamenting that many colonies were loafing because we could not work fast enough to give room to store all the honey. Those were busy days!

Talk of a land flowing with milk and honey! The honey surely flowed when we tore down the supers plugged with honey. Tearing away brace-combs and burr-combs built in corners and wide bee-spaces caused little rivulets of sweetness on the ground.

I did feel sorry for the bees, poor creatures! Because of the poor hive construc-

After the season's work in the apiary the boys go to the northern woods on a hunting trip. Edwin Byer, son of J. L. Byer, second from left.

tion we couldn't use escapes and every comb had to be brushed. And the way the bees were rolled around in the product of their own labor seemed almost a crime. As one pulled up the first fat dripping comb the bees came up, too, half drowned, fully drowned, or missing.

Extracting Stopped by Lack of Containers

By July 15 we estimated that a quarter of the crop (15,000 pounds) had been harvested. As if the shortage of supers were not enough, we now began to run short of containers. This, of course, made our storage space seem much too small. But after three unsuccessful trips to the flag station four miles distant for containers, they arrived, and operations were again resumed. It was at this stage that most of our dozen swarms came out.

We continued extracting, and each time we went to the yard we took back a load of empty supers of wet combs, to be placed on the hives. But instead of drying them the bees filled them with more honey.

That was the finest honey flow I have ever seen. As soon as the alsike quit yielding the alfalfa began. We had intended moving to buckwheat, some twenty miles distant, but since there is a vast difference between the quality of alfalfa honey and that of buckwheat honey, we decided that far away fields were not so fair as those at home. A note dated August 15 reads: "Bees rob badly today for first time." This was evidence that the flow was falling off.

Since I was taking up other work, I found it necessary to leave Binbrook on Sept. 24. At that time there was still more honey to be extracted. And in a "harvest-home" letter Mr. Byer wrote me that the final crop figure was 82,000 pounds, or 200 pounds per colony, spring count.

As I look back over that season I can not help thinking how much would have been gained by having more supers. Mr. Byer estimated that the colonies would easily have stored an average of one more super if they had had the room. In other words, he lost 12,000 pounds of honey, which was then selling at 11c per pound. But Mr. Byer looked at the 82,000 pounds rather than the 12,000.

Mr. Byer admits that it would have been much more pleasant to work with good standard equipment. But this season showed again in Mr. Byer's case that the maximum crop can be secured, even with poor equipment, and I have told you how he did it.

Nanticoke, Ontario, Canada.

TIDING OVER POOR SEASONS

By J. E. Crane

Plain, Simple, and Practical Directions for Solving a Difficult Problem in Beekeeping

That was a unique dream that the king of Egypt had nearly four thousand years ago. He dreamed that he saw seven fat, sleek kine come up out of the river, and then seven poor, scrawny kine come up, and these poor kine ate the fat kine, but were none the fatter for it. Then he saw seven ears of well-filled grain come up, such as every farmer likes to see, and then seven lean ears, blasted with the east wind, ate those that were well filled.

And Pharaoh called all the magicians and wise men of Egypt together to interpret his dream; but not one could do it. Finally he heard of a poor Hebrew slave who had been thrown into prison, and sent for him. Joseph (for that was his name) shaved himself, put on the best suit of clothes he could get, and stood before the king; and he was able to interpret the dream. The dream, said he, is one. The seven fat, well-favored kine and the well-filled ears represent seven years of plenty; and the seven poor kine and the seven blasted ears stood for seven years of poor crops and want that would consume all the surplus of the good years. Joseph proceeded to give the king some good advice as to the best way to meet the situation.

Now, what was true of Egyptian agriculture so long ago is true of agriculture today the world over to a greater or less extent. There may be one year of plenty and another of drouth or floods; seasons of abundance and seasons of blight and locusts.

The Fat and Lean Years in Beekeeping

What is true of agriculture in a general way is especially true of beekeeping. We have years of plenty and years of short crops or even famine. One year may give us a bumper crop, but the very next none at all, and it may be the bees may even have to be fed to keep them from starving.

What can be done about it is a question that often comes to an extensive beekeeper. One thing is certain: he can not change the seasons though he bombard the heavens with explosives. With all our modern inventions and improve-

ments, I know of no better way to overcome the lean ill-favored kine today than to follow the advice that Joseph gave to Egypt's king so many years ago. He told him to lay up a surplus during the years of superabundance to tide over the years of famine. We need not store our honey as the Egyptians stored their grain, but we can change it into money and the banks will care for it for us.

Big Crop Brought Ruin to Beekeeper

I had a friend, a beekeeper, who, I fear, did not read his Bible very carefully. At any rate, he did not follow the advice of Joseph. (By the way, that old book contains a lot of mighty interesting reading.) My friend had a very unusual season. It seemed almost as though it rained honey where his bees were located that year. He had, I believe, a whole carload of honey and he sold it for a good price. He had never had so much before in all his life.

Did he put a part of it by for a year of scarcity? It seems not.

If what bees he had could give such results, why should not two or three times as many give him a fortune? So he invested his surplus in hives and more and more bees until his money was well nigh exhausted. Then the lean, ill-favored kine rose up out of the river or the air or the ground to mock him. He had hundreds of colonies on his hands without honey enough for winter, or money with which to buy sugar; and, so far as I could learn, the most of his bees starved to death and he went out of the beekeeping industry. It makes me feel sad as I think about it today.

Lean Colonies Eat Profits from Strong

There is another lesson we may learn from this dream story. Supposing that we call all our colonies kine, what proportion are fat kine and what per cent are lean kine, ever ready to eat up our fat kine? Some years ago I was talking with a very extensive and successful beekeeper from the state of New York, when he inquired of me what per cent of my colonies in average years were nonproductive. He said that, so far as he could figure, about twelve per cent gave him no profit; so that, while he kept about 1200 colonies, he kept 144 at a loss, for he received no profit for the labor and other expenses he had laid out on them. So the lean kine ate up the profits of his fat kine. I had to confess that I was not far behind him. Bad wintering, queenlessness, drone-layers, or failing queens, gave me too many lean kine. True, I could often build up these weak colonies by taking brood from the strong ones and giving to the weak ones; but this is many times a clear case of the lean kine eating up the fat kine.

Remedy for Unproductive Colonies

There is just one cheerful thing about these lean kine: we may reduce their number by conducting our business with greater skill and care. I have inspected yards of bees in which it looked as though nearly all the colonies would prove to be lean kine. If we lose ten out of a hundred, the loss does not seem to be great; but when we take one hundred out of a thousand we feel our loss, for we have spent a lot of time and labor on them, to say nothing of the honey they have consumed, and the loss will go a long way in eating up the profits of the productive colonies.

Middlebury, Vt.

EUROPEAN FOUL BROOD TREATMENT

By Dr. E. F. Phillips

Why This Disease Behaves Differently in Different Localities and Under Different Management

(Continued from January issue.)

The next step in the progress of treatment (XXXVIII, p. 8) was brought out by the receipt of a letter from a New York beekeeper who reported that, having a large number of colonies diseased, he was unable to shake them all but merely requeened them and was greatly pleased to find about 95 per cent of the colonies thus left without a trace of the disease at the close of a very light buckwheat flow.'' In discussing this case, Doctor Miller reviews the probable reasoning of Alexander and says: ''But it is just possible that there is little or no chance for conveying the disease from a cell that is sealed, and that eight or ten days' queenlessness will serve the purpose just as well as three weeks. And if there be not too much cleaning up to do, it seems reasonable to believe that even less than eight or ten days may answer, when we take into account * * * the fact that a number of my colonies that were mildly affected cured themselves without any interference on my part.''

Reports now began to come to the journals from beekeepers who had used methods based on the treatment suggested by Alexander, some of them having used some form of the method even before the publication of Alexander's article in 1905. In these reports, the period of queenlessness is variously stated

as from ten to twenty-seven days.

In an article appearing March 1, 1910 (XXXVIII, p. 141), a Pennsylvania beekeeper who had been using the Alexander treatment severely criticises Doctor Miller for misstating the method. This article is of no value except for the illuminating reply of Doctor Miller, from which the following is quoted: "I gave as the Alexander treatment, page 760, to let the colony be queenless three weeks and then give it a laying queen. And now I have the very humiliating confession to make, that, until I began writing this paragraph, I didn't know that in giving the résumé of the Alexander treatment quoted by you, I had in the least misrepresented the said treatment, and turned to page 1125, 1905, to quote Mr. Alexander's own words about giving a laying queen. (I think I had never before given his own words in quotation marks.) What was my amazement to find that, instead of "laying" the word was "virgin"; I had read it over a number of times (twice at least after reading your article), but each time thinking "laying" as I read "virgin," discovering my error only when I went to make a direct quotation with the proper quotation marks. * * * I can only say that I am exceedingly sorry for the blunder, and express my thanks to you for calling attention to it."

It is thus evident that, in modifying the recommendations of Alexander, Doctor Miller did not do this intentionally. It is equally evident that, even before he found out that he had made a mistake, he had already seen that so long a period of queenlessness is unnecessary in some cases, for, as shown above, he knew that in certain cases colonies will clean up without a period of queenlessness and in other cases even ten days is unnecessary. It is thus evident that this "blunder" was a most happy one, without which advance in this subject might have been much less rapid.

Without entering into a discussion of all the reported successes and failures with the treatment of European foul brood which appeared during this year in the bee journals, it is worth while to follow the experience of Doctor Miller further during the following year. In Gleanings in Bee Culture for August 1, 1910, he states: "Best clover flow I ever knew till drouth cut it short July 10." On September 1, he makes the following illuminating comment on European foul brood: "Early this year my colonies appeared clean of foul brood; later it appeared in some colonies. Doctor Phillips says that the usual thing is for it to appear early and then disappear. That looks as if my bees had got the disease again from surrounding apiaries. * * * Colonies in general were very strong, and stored as I never knew bees to store before, until the terrible drouth stopped them." From our present knowledge, it is quite clear why in this case the disease appeared late in the season and not early.

In an article giving his experience with the disease that year (XXXVIII, p. 649) he states that, as he had through error reduced the time of queenlessness to twenty days, "As that succeeded, my chief effort this year was to see whether another ten days might not be cut out. So in many cases I destroyed or removed the queen, and at the same time gave to the colony a virgin." Just as good results were obtained even with this shortened period. This year there was a good honey flow.

Doctor Miller now records for the first time an experiment in placing the adult bees on drawn combs with one frame containing honey, liberating the queen just as soon as the bees were in the hive. This is, so far as the author is aware, the first record of the use of this method. The colony so treated was very weak and the disease returned later, although the first lot of brood was clean.

In the December 1 issue (XXXVIII, p. 753) Doctor Miller gives his theory that the disease is transmitted chiefly, if not solely, through the feeding of infected material by the nurse bees. We are not at this time concerned with the method of transmission. In the same article he tells of an experiment in caging the queen for a period of six days, which experiment he tried after August 1, when we would expect little of the disease to be present and when we would further expect that the simplest treatment might be successful. He does, however, in this article strongly lean to a period of less than ten days as being enough for the cleaning up of the disease.

The subsequent record of European foul brood in this apiary is briefly given in Doctor Miller's book.* The season of 1913 was the best ever experienced by him; and in spite of that about one-fourth of the colonies were slightly infected. In 1914 less than five per cent showed diseased larvae. In this book is briefly given the development of Doctor Miller's modification of the Alexander treatment; but certain useful details are lacking, so it seems best to give quotations from his journal articles.

Comparison of "Localities"

A discussion of the successive steps in the treatment of European foul brood

*Miller, C. C. 1915. Fifty Years Among the Bees. 320 pp. The A. I. Root Co., Medina, Ohio.

up to this point is incomplete without a discussion of the necessity for the differences in the treatments used by Mr. Alexander and Doctor Miller. To understand this, it is desirable that we examine the methods of beekeeping of the two men and the regions in which they operated. Alexander was located at Delanson, Schenectady County, New York, on the edge of the best buckwheat region of the state. E. R. Root said of this region in 1909, in the preface to the compilation of Alexander's writings, that the location of this apiary was "one of the finest, if not the finest, buckwheat bee-ranges in the United States. * * * Then the locality is remarkable for the large number of asters which probably furnish almost as much nectar as the buckwheat itself. While the white-honey harvest along in June and July can not be considered anything remarkable, yet when it is supplemented by the buckwheat and aster bloom one can form some idea of the possibilities from keeping so many colonies in one location."

Alexander was not far from the Mohawk Valley, where European foul brood was first identified, but where it has done much less damage than in the counties farther south. He kept a large number of colonies in one apiary, believing that it would be profitable to have 1000 in one apiary, but never exceeding about 750. The hive used by him was shorter than the Langstroth hive, making the brood-nests smaller. It is evident that during the spring, when European foul brood makes its appearance and does its damage, the colonies in this apiary would not be especially strong. Under these circumstances it would take longer for the bees to clean out the dead larvae than would be needed where the colonies are up to full strength for the period. In one of his articles in Gleanings in Bee Culture, Alexander rather complains against the white clover honey-flow as interfering with his plans for getting the bees ready for the buckwheat harvest.

Doctor Miller, on the other hand, was located at Marengo, Illinois, in one of the finest of the white clover locations in the country. In some of his writings he has expressed regret at not having as good a location as he would wish, but the soil conditions, rainfall, temperature and other conditions seem to point to this as a good location for nectar secretion from white and alsike clover. At any rate, these plants were for years his main dependence. He was, however, apparently on the edge of the good territory, and only a few miles to the west European foul brood has been present for a considerable time. He was also a little too far south for optimum nectar secretion from these clovers. The fact must be added that Doctor Miller was one of the most skilled beekeepers in the United States, his skill being manifest in his ability to get his colonies up to full strength before the clover secretion began. The colonies of bees in this apiary were far stronger than those in the hands of less-skilled beekeepers elsewhere. It will thus be seen that at the time that European foul brood made its appearance the colonies in this apiary were in the finest possible shape to throw it off.

It was pointed out at some length that in 1909, when the disease was first definitely identified in this apiary, the crop was a total failure, resulting in a weakened condition of the colonies. He records having seen diseased or dead larvae for several years before the epidemic. In 1910 there was a good honey flow, and while we are ready to grant to Doctor Miller an ability to clean up the disease by the methods practiced, the amount of the disease was beyond doubt reduced and almost entirely eliminated by the character of the season. He pointed out that the disease did not appear in 1910 until after the honey flow was brought to a close, a fact which he then erroneously attributed to the spread of the disease from adjacent apiaries. Under the conditions of the natural honey flows, and considering the great skill of this beekeeper, we are quite prepared now to believe that a shorter time will serve for the cleaning up of the dead brood under such management.

Not only may the divergence in the results of Alexander and Doctor Miller be fully explained by these differences in the conditions of the bees at this critical period, but the failures or successes of other beekeepers in trying these and other treatments are equally explained by differences in the strength of colonies. The number of bees in a colony that one beekeeper may call "strong" might constitute a weak or mediocre colony to another and better beekeeper.

The California Outbreak

In 1909 European foul brood broke out in the San Joaquin Valley, California, or at least samples of this disease were then for the first time received by the Bureau of Entomology. To understand the progress of the disease in this state and the remedies applied it is necessary that the beekeeping conditions be reviewed briefly. In the San Joaquin Valley at that time the chief source of nectar was alfalfa, a honey crop which comes relatively late in the season. There was then in that region a shortage of early sources. With changes in agriculture in the valley, earlier sources have

come into prominence, especially deciduous and citrus fruit blossoms. The disease soon spread through central and southern California. In the southern part of the state the chief sources of nectar were, at that time, the sages and the other plants of the chaparral region. These begin blooming freely during May if conditions are favorable, which is relatively about as early in the season as white clover in the East. There has been in later years a great development of beekeeping in the citrus region of southern California, but the beekeepers seemingly had at that time not taken full advantage of this earliest source. Secretion from chaparral sources depends largely on rainfall, and crop failures in this section are not uncommon.

It is also necessary that we consider the particular years when European foul brood spread so rapidly in California. Reports in the bee-journals for the year indicate not more than half a honey crop for the state and in some sections none at all. One beekeeper in the San Joaquin valley (Gleanings, XXXVII, p. 509) reports little better than half a crop, with none in some sections, due to losses from European foul brood. In 1910 the southern part of the state had one of the poorest years recorded for that section. There were abundant rains in some sections in December, 1909, and the total rainfall for the winter was fair, but the rain was badly distributed for stimulating the sages. During this year European foul brood made its appearance south of the Tehachapi Mountains in the sage region and attracted considerable attention. No definite reports have been found from the central valleys of the state, but it may be assumed that if the crop had been good there that this fact would have been stated as an exception for the state.

The progress in treating European foul brood in California is not recorded in the bee journals with the completeness which one might wish, but in 1917 the author had the opportunity of traveling in the state and of learning what the beekeepers had been doing in the way of control. It may be stated that there was in 1917 much confusion in the minds of beekeepers and even inspectors regarding proper diagnosis, and a corresponding divergence of opinion as to the applicability of various treatments. To understand the California European foul brood situation, it is necessary to know something of the practices of the beekeepers of the region. It may be stated without disparagement to the beekeepers of the state that they probably give their bees less attention during the part of the year outside the honey flow than do the beekeepers of any other part of the country. This is due to the mildness of the winters in the state, but it is evident that better care would greatly increase the honey crops and lead to better European foul brood control. It is not an uncommon practice for a beekeeper to leave his bees as soon as the crop is off, housing them in a single hive-body with scant stores, and scarcely to see them again until the opening of the main honey flow of the following season. Many colonies in all parts of the state are not up to more than half-strength at the beginning of the best honey flows of the year.

A complete understanding of the European foul brood situation in the state is impossible until one knows the type of disease often encountered. Because of the neglect of the bees after the active season is past, and because many beekeepers make no attempt to rid their apiaries completely of the disease, it is quite common to find in the state cases of European foul brood in an advanced stage, in which larvae die after sealing, with the characteristic rubbery scales of that stage. This condition has been described and explained by Sturtevant in New York, and the same condition prevails in many infected apiaries in California.* In this advanced stage, due to the neglect of the disease and of the bees, there is often some difficulty in applying the treatments which are applicable to the earlier stages, such as Doctor Miller encountered. This led to the belief of many beekeepers that the findings of Doctor Miller were of little value to California conditions.

While all the methods advocated in the East had been tried, it was then the rather general belief that these were not applicable to California conditions. It was found that most beekeepers were following the practice that had been given by West as early as 1899 of placing the infected brood above a queen-excluder, the queen being placed below. In not all cases was a young queen given the colony, and not in all cases was the treatment successful. It seemed to be the general opinion of the beekeepers that this method was the best for the conditions found in the state. There were, however, other beekeepers who were insistent that the best way to treat the disease is to "feed it out." The obvious result of this is that the colonies are so strengthened that they are able to rid themselves of the disease.

*Sturtevant, A. P., 1923. The relation of Bacillus alvei to the confusing symptoms in European foul brood. Read at Apiculture section, Association of Economic Entomologists, Dec., and published in Jr. Econ. Ent., 1924.

(To be continued.)

ORIGIN OF THE RACES OF BEES

By Phillip J. Baldensperger

Many Racial Characteristics Can Be Traced Back to Influences of the Environment

The small Egyptian bee, isolated in lower Egypt for many thousands of years, can thrive only in the irrigated parts of the Nile where soy beans, lupines, and sulla, the Egyptian trefoil, are largely grown. Surrounded on all sides by sandy deserts, the bee has grown to be a fixed race, but this does not give it the right to be called a primitive race.

For centuries the Egyptians had kept their bees in elongated hives prepared from the sticky mud of the Nile mixed with bits of straw. The dough, so to speak, is rolled out on the ground to form a big cake about an inch and a half thick. When this cake is about the size the beekeeper wishes it to be, he takes a wooden cylinder around which he joins the lengthwise edges which he rolls together till the joining disappears. He now pulls out the cylinder and leaves his tube hives, about a yard in length, to dry in the warm Egyptian sunshine. At swarming time the bees are hived in the tube after the interior has been rubbed with orange leaves or some other aromatic plant to attract the bees. Both ends are stopped with mud stoppers, and a flight-hole is made in one of the stoppers. The hives as seen about the villages in the Delta are piled up in four to five layers like cordwood. Several hundred hives are thus put up like a solid wall and fixed up in a solid mass to hinder vermin of all kinds from seeking food and shelter about the apiary. About the top, thick layers of palm leaves are spread as a protection against the fearful rays of the sun.

The ancient practice of carrying hives up and down the Nile has been kept up till the end of the last century.

Through the long isolation in a warm climate, where winter is hardly worth mentioning, and where flowers may grow all the year round, the Egyptian bees long ago abandoned the habits of bees living in colder climates, dependent on an accumulated reserve of winter stores in the hives. The cross disposition of the Egyptian bees is due to the numerous enemies which try to take away the honey so parsimoniously stored up. Like their Egyptian owners, the bees are influenced by the climate and can not see why they need to work faster when they are sure the fields will give them fresh nectar throughout the year.

Type of Apiary Influences Disposition of Bees

In Palestine there are two kinds of hives and apiaries. In the maritime plains the sunburnt clay hives bear a great resemblance to those in Egypt. They are, however, shorter, and at least twice the diameter, yet cylindrical in form. They are likewise piled up in three or four layers and covered with palm leaves, where they are found about Gaza and the maritime villages, or else they are protected from the rays of the sun by a kind of thatchwork made of stalks of dura (sorghum) or wheat stalks. In the apiaries in more elevated regions, in the mountains of Judea or Galilee, the hives are made of clay, somewhat pear-shaped, and baked in ovens. The pointed part contains the flight-hole, and the back part is stopped with concave plates of the same material, and closed with clay and cowdung. Here the hives are put in arches of solid masonry which protects them from sun and rain. The face of the whole surface in the apiary of a careful owner is well smeared with clay to keep away geckos and lizards, which abound in Palestine as elsewhere. Their absolute seclusion and undisturbed position for at least 11½ months in the year have given the Palestinian bee a special disposition never to attack passersby if not troubled. As a boy of ten years, when trying to escape the threats of an usher in Zion's school, the author jumped on top of an arched Palestine apiary, and jumped in front of the archaic hives. The aroused bees gave a few stings—probably his first acquaintance with stings, though certainly not the last. Hornets (*Vespa crabro*), wasps, and bee-eaters (*Merops apiaster*) swarm about the hives in summer. The approach or disturbance of these enemies renders the bees very nervous, which also accounts for their stinging inclination.

In the old Saracenic castle, built about the so-called pools of Solomon, which are the reservoirs of water for the temple services in Jerusalem, bees were kept in these same typical beehive arches of Judea. The bees were shared by different parties—by Christian Arabs living in Bethlehem, by Moslem or Mohammedan Arabs living in the village of Urtasse, and by the author's father, Henry Baldensperger, living in Jerusalem. There were several hundred hives placed under a dozen or more arches. All flight-holes of the hives opened toward the courtyard. An old but solid gate was the only entrance, which was guarded by shadirma, Turkish gensdarmes, or

mounted policemen. Horses were kept in vaults inside the castle, but never a complaint was heard of the bees stinging the horses, and the bees and horses, the latter generally disliked by bees, lived on friendly or rather indifferent terms. Horses do not eat honey, and bees can do nothing with straw or barley, so there were never any controversies. Bees learned perfectly to fly over the walls, some thirty to forty feet high, to go for the nectar from the hills about Bakoosh and Karaweesh, or in the direction of St. George's asylum, on which hills thyme abounds. As much as the orange-blossom odor influenced the bees in and around Jaffa, so much did the thyme blossom calm the same bees when brought up in summer to the thyme harvest.

As long as the author lived in and about Jaffa, during the years 1883 to 1892, bees were seen coming from the surrounding villages, flying for a distance of four miles at least in search of nectar. Did the odor or the tumbled-over buildings influence the bees? Cactus (*Opuntia cummunis*), sage, lavender of the mountains, the dwarf acacia (*Prosopis*), which grows in all fields, yield plenty of nectar. Honey comes in slowly, but sometimes as much as 22 pounds of orange nectar was registered in a single day in April.

The Palestine bee flora can be called excellent from the ancient Dan to near Beersheba, where the dry desert of Judah begins. Along all wadies, or river-beds, the *Vitex agnus castus*, a beautiful shrub with violet flowers growing on a high stalk, gives plenty of nectar. Two characteristics of this honey distinguish it from other honey: when freshly extracted the taste and odor are so nauseous that headaches were not infrequent in its environs, though this disappears wholly after a week; and the honey, in spite of the warm summers, granulates to such an extent that a customer once complained to the author that he had "ordered honey, not wax."

Wax-moths abound wherever careless beekeeping is going on, and to some extent they are a real blessing where careless beekeepers exist, since they destroy every particle of unoccupied comb, giving a guarantee that any infectious disease is destroyed. That wax-moths might become carriers of bee diseases, as recently announced in some French papers, is so rare at all events that after 45 years of extensive beekeeping with hundreds of colonies in Palestine, north Africa, and in the south of France, the Baldensperger Brothers have never encountered a single case. This shows how slight is the danger that the moths might carry the disease.

As we approach the rocky slopes of the Lebanon range, where the Syrian bee lives, the material used for hives is again that which is easily obtainable on the spot. Wicker-work baskets are used in the elongated forms, about the same size as the hives used in Palestine. The hives are also piled up in layers, both ends closed with wicker-work stoppers, and the pyramid of hives covered over with boards or branches.

Why Eastern Races Readily Find Their Own Hives

Hives with their flight-holes so close together have not been known to confuse the workers on their daily trips, nor do virgin queens mistake other hives for their own. Modern beekeepers, and especially such as raise many queens, have employed all kinds of devices, such as painting the fronts of the hives different colors or with circles and squares, to guide the virgins returning from their nuptial or wedding-flights back to their own hives. A bee flying out individually takes its bearings in such a short time that it is almost impossible for us to perceive it. Our huge brain and our great eyes in comparison with the tiny brain and eyes of the bees, can not be compared. Bees may or may not see the circles or squares painted in front of their hives; but as the hive-entrances in the Orient are generally so close together they must observe very tiny objects for which we would need a magnifying-glass. They take in at a glance the location of hives as well as other signs, just as when man tries to locate a store in a big town by reading signs or by fixing his attention on some outstanding pole or on the particular shape of an awning. Big eyes and brains see and conceive great things more readily than they do small objects. So a bee will more readily see the stalk of a small flower than the trunk of a tree, and even any unevenness in front of the hives.

On many occasions bees have been observed to fly away in search of food, without any preliminary preparations to recognize the environs. On one of these, a hundred or more hives had been rudely unloaded from a train of camels which were carrying them through the mountains of Judea. Some hives were dragged along by the ropes used for fixing them to the camels; others were thrown into ditches. As the sun was shining (as it usually does under a cloudless Syrian sky) the flight-holes of the hives had to be opened to prevent the bees from being smothered. Some bees rushed out and attacked furiously; others simply went out fielding, and in a short

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time the whole lot were at work as if they had been in a well-established apiary. Straight lines and well-organized apiaries are nothing to bees.

Again, on another occasion, after having moved bees from Nice to the Alps, on arriving at the desired spot by daybreak the hives were set down and bees let loose. The bees flew directly to work, without flying in circles to fix the location. In eight minutes the first bees brought back honey and pollen gathered from the surrounding lavender plants growing on the mountain slopes.

What is a bee's memory? How long will a bee remember? How can she reveal or keep secret what she knows? Bees exactly remembered and had fixed into their visual sense the location of their nucleus on a flat of land in Jaffa. The nucleus was removed daily a distance of about ten feet and the bees readily followed each successive move. On the eighth day the nucleus was removed 20 feet at once. Many bees, however, remembered the position of the first day, and settled on the ground where the flight-hole of the nucleus was at first, though nothing but a few pebbles indicated the spot. The bees had remembered the pebbles.

All Orientals have been known to fight European foul brood by regularly cleaning the hives, but none could succeed in getting rid of American foul brood. In his treatise on bees in the Grecian Archipelago, Abbe della Rocca writes that foul brood of the gluey kind, as he so accurately describes it, had destroyed all the colonies in the island of Syra, off the Anatolian coast, in 1788. Neither American foul brood nor European foul brood were known in Egypt, Palestine, and Cyprus up to 1892, when the author left Palestine. American foul brood had been imported, undoubtedly by Jewish settlers bringing old hives with them from Bessarabia, south of Russia, to southern Palestine toward the end of the nineteenth century. The author saw it there in 1922, while the north of Palestine and Galilee had no bee disease to mention.

Swarming Tendency and Irritability of Oriental Races

Swarming propensities have been bred into most races of bees by their being raised in small hives. All over the Moslem countries, from Asia Minor through Syria, Palestine, and Egypt, and all over north Africa, hives have a tubular form, very often not exceeding 5 inches in diameter and about a yard in length. These are laid down flat, not in an upright position as it is done in Christian countries. Every progressive beekeeper can imagine how easily the low Oriental hives are filled when a good honey flow comes on, and when the bees are headed by a prolific queen. One, two, three, or more swarms will issue in the course of two weeks; and the last swarms, often containing dozens of virgins, may not be much larger than a man's fist. However, this exaggerated swarming fever may be calmed down in a generation or two provided the bees are hived in good-sized spacious homes.

Being watched by enemies of all kinds, all Orientals are ready to fight. Swarms of bee-eaters (*Merops apiaster*) fly about the apiaries. Wasps and hornets by hundreds approach the entrance. Bands of large lizards of the Agamide class (*Hellio cordylina*) hide below or behind the hives, and dart out at the bees in the act of starting. The smaller wall lizards (*Lacerta agilis*) timidly but surely take half a dozen bees for one breakfast; scorpions or mantises feed occasionally on bees. This explains the readiness of the poor Orientals to defend themselves. A well-filled smoker with a permanent smoke is always necessary when visiting Orientals. Many beekeepers of very nervous temperament are to blame for the irritability of bees. No attempt has been made to introduce foreign bees on a large scale in Palestine; and isolated cases of introducing Italians, Caucasians, Carniolans, or brown Europeans have always proved to be useless, as the foreigners were hybridized in the next generation.

The wintering problem in their native countries is of very little importance. Acclimated for thousands of years, getting as much money as is necessary for the flowerless and cold winter season, as well as a little over for the coming spring, they cluster more or less intensely according to the usual circumstances. Imported into colder climates these bees will for some time continue in their old habits, but will modify their ways when having passed winters after a generation or two.

Winter scene high up in the mountains of Arizona.

FROM THE FIELD OF EXPERIENCE

HONEY MARKET IN WISCONSIN

Heavy Crop Results in Panicky Selling and Demoralized Local Market

It may perhaps be well to start this article by saying that the honey market in Wisconsin is just coming out of a panic of the worst kind, and this is, I think, a happening from which not only Wisconsin beekeepers, but beekeepers from other parts of the country might learn a great deal. Generally speaking, there is no honey market in Wisconsin at the present time, although conditions have the appearance of improving. This does not mean that honey has not been selling, for large quantities of Wisconsin honey have been disposed of, but under such conditions that many of our beekeepers have not felt that they could afford to sell. Prices have been reported as low as $1.00 for a 10-pound pail, and one report has come into the secretary's office of a sale of 60-pound cans at $4.00 per can. Just how much was disposed of at this price we do not know.

It might be well to review the situation as it has developed in Wisconsin this year. In July, 1925, there was very little of the 1924 crop left on hand. The spring season was very slow and at times it seemed that thousands of colonies would starve before the honey flow began. Early in June a light honey flow started and continued up to about July 1, at which time it appeared as if there could hardly be any surplus crop. About that time, however, clover suddenly began to secrete nectar so rapidly and abundantly that the bees were in an uproar all day long.

During the ten years that I have been in Wisconsin I have never seen such a peculiar year. Poor beekeeping was at a premium, for many of those who had sadly neglected their bees in the spring found them at the peak about July 1, and as a result, wherever sufficient storage room was given, secured as large a crop as the expert beekeepers. On the other hand, many good beekeepers did not have their bees in any better shape and had no advantage when it came to securing a big surplus. The season of 1925 was one of the years when poor beekeeping was good beekeeping, and every colony that came through the winter with a queen was able to become a first-grade colony by the time the honey flow started.

The honey flow was so rapid that bees went readily into comb-honey supers, and as a result both comb and extracted honey was a drug on the market before the marketing season began. Much of the comb honey was of an inferior grade, and some beekeepers took advantage of this fact to sell their honey as ungraded, even selling one-pound sections as low as 10 and 15 cents at retail. By the middle of September both comb and extracted honey had flooded the market and any amount was available for prices as low as 9 to 9½ cents a pound.

Without rhyme or reason, or without any consideration for themselves or their neighbors, beekeepers began to throw honey on to the market without offers, rather than asking for bids. It seemed as though the honey was as perishable as vegetables and could not be kept over night. Prices were cut right and left and every one seemed to be trying to get a lower price than the other fellow. Every town and city in the state was overrun with peddlers offering honey in 5 and 10 pound pails at from 12½ to 20 cents a pound. The natural result is that the honey market is completely paralyzed, except in a few points where no price-cutters happened to exist.

As a matter of fact, sales have probably not been as large as usual in spite of this condition. The buying public, because so much honey was offered for sale at so many different prices, seemed to be afraid to buy and became shy long before they were ready to buy. Some people went so far as to inquire about it. They wondered what was the matter with the honey they were being offered at prices which challenged the worth of the product. Lack of labels, misbranding, and a general evasion of the grading regulations have not been uncommon. Unfortunately, a good many intelligent beekeepers, thoroughly familiar with the ethics of business methods and lawful grading, helped in this orgy of demoralization. It is safe to say that the marketing end of the beekeeping industry in Wisconsin has been set back five years, as it will take that long again to establish a standardization of the prices that have prevailed for several years in Wisconsin and which the consumers have become used to.

In May and August, while visiting practically every beekeeping section of the state, I was quite surprised to find that 20 cents a pound was the rule through a better part of the state. The beekeepers had become used to receiving this and the customers had been used to paying it, and in those sections where

honey had been sold for 15, 16, and 17 cents in 10-pound pails, the local organizations were working toward an advance to 20 cents. At the same time honey has been wholesaling in Chicago at 12 to 12½ cents per pound for the better grades, which was a much better price in proportion than was being received by the beekeepers at home. However, due to the fact that all of Wisconsin's honey has been sold locally, our beekeepers are completely out of touch with the wholesale market, and made no attempt to sell honey outside the state until late in November and December. The outside buyers have not been used to buying honey extensively in Wisconsin and had stocked up from other regions. The great pity of the situation is that practically as much honey or even more could have been sold at standard prices, and the surplus honey could have been moved out slowly at a much better price than has been possible under the present conditions.

I believe there is a good lesson to be learned from this incident. The marketing of honey has made no progress, and in proportion to cost it is, generally speaking, selling lower than at any previous time in its history. The consumption of honey, especially locally, has improved, and more honey than ever is being sold in Wisconsin. But unless beekeepers can be brought to co-operate in selling at standard prices, beekeeping can not develop to the fullest extent and the number who depend upon bees alone for a livelihood is bound to show a decrease.

The large beekeeper who is attempting to do things on a business scale is made to suffer severely by the small neighbor beekeepers who produce inferior crops and ruin the market with a poor quality product sold at prices actually below the cost of production. My limited observations on the marketing of honey lead me to believe that no national organization can ever be developed without first developing sound state associations; and I believe that, before state associations can be developed, local and county associations must be brought into existence. District and county marketing organizations could be developed very easily in any community where all of the beekeepers would be willing to pool their honey for grading and selling both locally and in a wholesale way. The chance for this co-operation is very remote, due mostly to the selfishness and partly to the ignorance of those who must join in such a movement.

H. F. Wilson.

Madison, Wis.

BLACK MANGROVE HEAVY YIELDER

A Peculiar Condition Which Governs the Yield from This Plant

Black mangrove is a heavy yielder of nectar and the bees store immense quantities of fine light amber and lighter honey from it. The consistency of the honey is rather thin and it is one of the first of our Florida honeys to crystallize.

This wild tropical tree grows only close to the salt water; in fact, it seems to thrive best with its roots covered with salt water twice a day, at high tides. Its yield of honey is greatly governed by a condition which seems to have been overlooked by casual observers. The tree exudes moisture from the pores of the leaves and blossoms, which evaporates, leaving a fine deposit of salt. This deposit, unless it is washed off by frequent showers, stops the work of the bees. I have seen these trees, while in bloom, enveloped in a cloud of bees, and have seen bees take their full load of nectar from one tiny blossom. I have watched the accumulation of salt increase until the bees were apparently obliged to quit, notwithstanding the fact that the blossoms were still dripping with nectar. Then would come a shower, washing off the salty deposit, and almost immediately the bees would come back again.

Mangrove honey is rarely to be had absolutely pure. The bees have so many other sources of honey available at the same time that mixtures are certain, which, if I am not mistaken, is of great advantage in producing a most delightful blend of flavors, just as it is with orange blossom honey, which is rarely pure on account of coincident and equally attractive blossoms. A neighbor tried what he insisted was pure orange honey on his pancakes. He couldn't eat them because the aromatic flavor was too strong, a concentrated perfume.

The red mangrove tree does not bend down, as some think, but sends down roots from overhanging branches. These roots, in the shape of a slender stem, grow down through the salt water until they reach the bottom where they spread out and take a firm hold. As soon as these root stems reach into the water they become covered with oysters. At our picnics we cut these bunches of oysters with their convenient wooden handles for roasting over campfires. We thus have literally "oysters growing on trees." Red mangroves are land builders, the shells from the oysters gradually building up into an island. We

have one of these islands in the bayou on our own place.

We have also several kinds of eucalyptus. They are beautiful, and furnish bloom for the bees all through the winter months, encouraging them in their preparations for the spring and summer campaign. In February we should have orange, grapefruit, lemon, avocado, and mango, all in bloom, and the much maligned mangrove getting ready for business down at the bayou. J. W. Barney.

Bradentown, Florida.

QUEENS ACROSS THE PACIFIC

An Experiment in Carrying Them to China in a Specially Prepared Box

You might be interested in an experiment which we are carrying out in the importation of Italian bees into China. For some years I have been living in

Boxes for carrying queens across the Pacific, designed by Herman Rauchfuss. Mr. Rauchfuss is shown at the left in the illustration.

China (Foochow) and have kept a few colonies of native Chinese bees for experimentation and fun, often wondering how they compare with Italians. On my return in January, through the interest and co-operation of Mr. Herman Rauchfuss, of Englewood, Colorado, I am taking back some queens, and if any success attends our effort it will be due to his careful planning.

The bees are in a two-story box, each story being the heighth of a comb-honey super and containing three compartments just wide enough to receive a section of comb honey, and long enough to contain six comb-honey sections face to face. In each compartment there are three sections full of honey for food on the long journey and three sections of empty comb or foundation on which the bees may cluster. About four ounces of attendant bees are given each queen. As I am stopping in California and Honolulu, the bees will not be longer than two weeks without a flight. A screen at the back and an entrance, covered with queen-excluding zinc, at the front of each compartment allow for ventilation and flight of the workers.

I have known of several failures in shipping full colonies across the Pacific, but see no reason why we should not succeed with our method. There are Italian bees in Japan and a few colonies in China, but I am not sure of their purity, so I am taking in some that are as pure as we can get them here. I have Italians from J. M. Cutts, of Alabama, and J. P. Moore, of Kentucky; Caucasians from Mr. Rauchfuss, of Englewood, Colorado; and Golden Italians from the Dr. White Bee Company, of Sandia, Texas. They will all be tried out with the Chinese bees and comparative studies made. C. R. Kellogg.

Denver, Colorado.

A CURE FOR ACARINE DISEASE

Treatment by Which Old Diseased Bees Are Separated from Young Healthy Ones

In October, 1923, the writer's apiary consisted of 19 strong colonies of Italian bees. They had none of them been microscopically tested at this period, and there were no external symptoms of disease. They were all amply provided with first-rate stores. During the winter and spring of 1923-24 twelve of the nineteen colonies died with the usual external symptoms of acarine disease. In the spring of 1924 the remaining seven colonies were microscopically examined and six of them found to be infested. An attempt to cure these colonies by spraying and fumigation proved ineffectual, and manipulative treatment was tried.

This was carried out by two separate methods. The first consisted of making three new colonies by the artificial incubation of brood from diseased colonies on a hot-water tank and building up the nuclei thus formed by the addition of more brood from diseased colonies. The combs of brood were not disinfected in any way, but all adhering bees were carefully shaken off before giving to the new colonies. The new stocks were tested in the autumn and found free from disease. They have now been tested again, by the dissection of fifteen foraging bees from each stock, and they are still free from disease. This, in the writer's judgment, is a positive proof of cure and is also a new proof that the

disease is not carried on combs of brood.

The other less radical treatment was undertaken as follows: Nuclei were formed by taking frames of emerging brood from diseased colonies in the middle of the day, with the adhering bees. These nuclei were given queen-cells or young laying queens, and were placed in new positions away from the diseased colonies. The bees were not shut in the nuclei, so that the foragers returned to the parent hive. Fresh brood without adhering bees, also taken from diseased colonies, was added to the nuclei as fast as they could take care of it. As soon as they had built up into strong stocks they were again removed to a new position, and the flying bees which returned to the old stand were caught by one of the diseased parent stocks placed in position for this purpose. Twelve new stocks were formed from six diseased ones by this method. Briefly, the parent stocks were repeatedly robbed of brood and strengthened by flying bees, while the new stocks were strengthened by frequent additions of brood, and each on two occasions lost its flying bees.

The parent hives ended the summer strong in foraging bees, but on examination were found to be infested to the extent of from 50 to 90 per cent. Several were destroyed in the autumn, and of the remainder only one stock survived the winter. This stock was extremely weak in the spring, and on examination was found to be 50 per cent infested. It was therefore destroyed.

The new colonies were packed for winter in good condition, and came through in first-class order. All twelve have now been microscopically tested. Fifteen bees were dissected from each stock, in all 180, and only one bee was found infested in one trachea. It is clear from this experiment that some strains of Italian bees will cure themselves, given suitable manipulative treatment. It is also clear from the fate of the original colonies that the same strains will succumb to the disease if the system of management is such as to help the mite to multiply.

Most of our professional bee-breeders appear to have little trouble from acarine disease, and some of them claim that their bees are practically immune. I suggest that it is their system of management which makes them so. If you sell bees it stands to reason that you are all the time helping your stocks to get rid of any chance infection, and as long as you continue in this business the mite should never have a chance of getting established. I quite admit that a resistant strain of Italians is probably an important factor in getting rid of the disease, but the strain is not a sufficient safeguard without the right management.

The honey producer who does not sell bees is the man who is most likely to suffer from acarine disease. If you pass through several seasons, as I have done, without allowing any swarms, and without selling any bees, all your old bees are kept in your colonies and the mite has every opportunity of migrating steadily from the old to the young bees, until mass crawling in early spring reveals the state of affairs. Mere prolificness in queens is no safeguard.

It is still too early to dogmatize on the question of a cure for this disease, but the results of the microscopic tests suggest that it can be very easily got rid of by either of the methods above indicated. C. T. Sanctuary.

Bridport, England.

[Fortunately, acarine disease, also called Isle of Wight disease, is not known to exist in America. It is a disease of adult bees caused by small mites which live and breed in the trachea of the workers. Some such treatment as described above might prove to be effective in some of the diseases of adult bees found in this country, especially if the trouble is transmitted from one bee to another and not from the food or some other common outside source. The causes of the diseases of adult bees found in this country, such as paralysis and disappearing disease, are not known.—Ed.]

THE FOOD-CHAMBER IN ENGLAND

The British Standard Frame Lends Itself Well to the Two-Story Plan

A warm welcome awaits all brother beekeepers from across the water who would care to visit my apiary, which is in my garden here in Cheltenham, England, and see how a small apiary of under fifty stocks is worked on American principles, but with British standard brood-frames.

The comb contained in these frames is about 13½ inches long by 7½ inches deep, and on an average contains 5000 cells. A standard British brood-box contains ten frames. Up-to-date beekeepers who use the British standard brood-box are more and more coming to use it on the double brood-box system, giving the queen the free run of two brood-boxes, one on top of the other.

The two brood-boxes give a capacity of 100,000 cells, which would allow a

queen to lay at the rate of 3500 eggs a day for 21 days, and in addition provide comb to contain over twenty-five pounds of honey and pollen for the immediate necessities of the stock. In other words, two British standard brood-boxes have practically the same capacity as a Langstroth hive-body with a half-depth super on top of it. But in the former case there is only one size of frame, which is undoubtedly a great advantage when manipulating. Again, the British frame, holding as it does five pounds of honey, and being easily uncapped with one stroke of the uncapping knife, is quite satisfactory for supering purposes. This means that, where this frame is used, it is only necessary to have one size of frame and one size of box.

In the fall, the upper box acts as a food-chamber and contains fifty pounds of honey, leaving the lower box for the bees to cluster in, dry and warm on the more or less empty combs. The double brood-box is almost a cube and may be visualized as a single brood-box with combs 13½ inches long and 15 inches deep, but which, when necessary, can be divided into two parts at the discretion of the bee-keeper.

I have designed a simple type of hive, somewhat similar to the Langstroth, to take our standard frame. The frames hang parallel to the entrance, the warm way, and the sides are double to take the long lugs that are a part of the British frame.

The hive is not painted, but treated with creosote inside and out. Creosote is a powerful destroyer of disease and hardens and preserves wood. All my hives have been treated with it during the past six years, and I am confident that it is much better than ordinary paint.

When packing down in the fall, an inner cover is placed on top of the food-chamber, and on top of the inner cover many layers of newspapers. A piece of bituminous roofing-felt six feet long by eighteen inches deep is wrapped around the two brood-boxes and held in place with a few drawing pins and the telescopic roof which covers the upper half of the hive and felt.

I have no financial interest whatsoever in the hive and only send you these few notes, thinking that they might be of interest to your readers, as giving them an insight into some of our methods on this side of the water. I feel sure that the more we English-speaking nations know of one another, the more we shall pull together, and the better we pull together the better it will be for the peace and welfare of the world at large.

G. J. Stoney Archer.

Apiary of G. J. Stoney Archer, Cheltenham, England, operated on the food-chamber plan.

SIFTINGS

by J. E. Crane

Chas. N. Poling tells us on page 25 that "no matter how cold the weather" the bees "never allow their apartments to become lower than 57° F." Does he mean by apartments the hive or the center of their cluster? There is quite a difference between the two. [He means within the cluster.—Editor.]

* * *

Mr. Baldensperger is such a cosmopolitan that his statements on pages 23 and 24 are of rather unusual interest. That bees become gentler in northern regions is a new idea; also the fact that enemies that constantly irritate them tend to produce races or breeds that are ill-tempered, like the Cyprians.

* * *

Is there any better or cheaper method of advertising than the radio? On Dec. 4 Prof. Jager gave a lecture on bees and honey in St. Paul that my son here in Middlebury, Vt., was able to follow very well. Just how many persons heard that lecture no one can tell, but the number must have been large. Neither can we tell how many mouths watered for a taste of the delicious product of the hive.

* * *

Mr. W. J. Nolan has some good things to say on pages 30 and 31. He says that in Quebec they have established traveling libraries among beekeepers. This is a capital idea. It has always seemed to me that a few large libraries are quite too isolated to be of great value to the mass of beekeepers. A few standard works of easy access to the many beekeepers would be of far greater value to the country.

* * *

What is still better, I believe every one who expects to keep bees to any extent should have a small library of his own. He can make no better investment in his business. Then by consulting one authority and another on some problem in which he is interested he can have a live "beekeepers' convention" right in his home during the long winter evenings.

* * *

I have read somewhere that E. R. Root reports finding an audience of 1600 persons, not one of whom had ever eaten honey. I did not suppose you could find twenty-five persons anywhere in the United States of whom this could be said. This shows how poorly the trade in honey has been pushed or advertised, and how large an outlet could be made for it.

I received an inquiry from some one some time ago asking me about the use of corn sugar for bees and asking for a reply in Siftings. As I remember, the use of corn sugar or corn syrup was discussed in Gleanings some twenty-five years ago. I believe it was found quite difficult to get bees to take it clear, and if they do it is quite sure to kill them. I tried it, I remember, with very unsatisfactory results.

* * *

Mr. J. L. Byer is not a large man, but is a pretty hard one to down in an argument, especially on feeding bees for winter. I should like to know what you mean by solid combs Nov. 1. Does it mean that you feed syrup made of one part water and two parts sugar in October until the hives are full, or does it mean combs of sealed stores to the bottom of the brood combs? There is a great difference between the two kinds of solidity.

* * *

Few foods have such a wonderful and interesting background or history as honey, which beekeepers and dealers in honey do well to keep in mind. In a letter recently received from Prof. Jager he says, "From actual inquiries in the Twin City stores I ascertained that there is a notable increase in the sales of honey for a week or ten days after each talk on bees over the radio." It costs the beekeepers nothing, and broadcasting stations are eager to arrange for honey talks provided these talks can be made interesting, catchy, and peppy, to catch the popular fancy.

* * *

Mr. Nolan also informs us that the Scottish people have actually taken to eating honey as a food rather than as "a luxury and remedy for colds." What a day it will be for beekeepers when people all over our land take to doing the same thing! With Ontario and the Northwest having more honey than they know what to do with, it looks as though honey might prove their ruin. Meanwhile bee conventions are being held and bee literature is being pushed to produce more and more. It looks as though we should all be like a bee drowning in honey—a pitiable sight. But there is another way of looking at it. With lower prices, increasing consumption will follow as the seasons follow the sun, and soon the demand will outrun the supply, and the bee-man will be well repaid for his toil.

FROM FOREIGN LANDS By W. J. NOLAN

The average honey crop of Germany is given as 12.1 pounds per colony by Doctor Armbruster in the Markische Bienen-Zeitung for November. The average yield per colony in the United States for 1924 was estimated by the Bureau of Agricultural Economics as 46.2 pounds.

The annual production of honey in Poland is more than 15,000,000 pounds, according to L'Abeille for December. This amount, however, is not sufficient for local demands, and in 1924 several hundred thousand pounds were imported.

Doctor Borchert describes, in the Markische Bienen-Zeitung for November, his experiments which showed that spores of *Bacillus larvae*, the causative organism of American foul brood, can pass through the digestive system of the ordinary larder beetle (*Dermestes lard.* L.), without losing their virulence. The same holds true of *Nosema apis*. Doctor Borchert also found that certain hive mites (*Tyroglyphidae*) are capable of transmitting *Bacillus larvae* in like manner.

The Province of Quebec produced 3,293,610 pounds of extracted and 427,946 pounds of section honey during 1924, according to data in L'Abeille for December by C. Vaillancourt, in charge of the Government apicultural work in that Province. Since 1921 there has been a slight decrease in disease, but an increase in winter losses. Furthermore, an appreciable diminution in the number of black bees kept has taken place, while non-movable-frame hives now number only 6.48 per cent of the total.

Australia produced 27,720,626 pounds of honey during the five consecutive seasons ending in 1923, states the Victorian Bee Journal for August last. During the season ending in 1923, 6,369,062 pounds were produced from a total of 145,257 colonies. During the five-year period both Victoria and South Australia produced more than New South Wales which has, on the other hand, a larger population than either of the other two states. This is advanced as the reason why marketing in those two is more of a problem than in New South Wales.

To overcome marketing difficulties the beekeepers' association in the Department of l'Aude recently opened a place for the sale of honey and other apiary products in the city of Troyes, a town known to many members of the American Expeditionary Forces. It was a success from the beginning, according to L'Abeille for December—so much so, in fact, that the members are not furnishing honey enough to meet the public's demand. Furthermore, within the first six months, 114 new members were gained for the association.

The value of the annual production of honey and wax in Germany is 35,000,000 gold marks (nearly $9,000,000), while the value of the service rendered by the honeybee in pollinating fruit trees in that country is thirteen times as much, says a writer in Die Bayerische Biene for November. It would be highly instructive to know the cash value of the pollination work of the honeybee in this country, because this important function of the honeybee in American agriculture has never been kept before the public in its full significance.

Dr. John Rennie, of Scotland, whose name is so closely associated with the discovery of *Acarpis woodi* as causing the Isle of Wight disease, in his address before the beekeepers' meeting in Vienna recently, as printed in the Bienen-Vater for November, asserted that the work of the mite after invading a colony proceeds slowly. It may even escape observation for more than a year. He is at a loss to explain why the mite on the continent of Europe, as compared with the British Isles, appears little harmful so far. From his work on various bee races brought to Great Britain to study their resistance to the mite, he is convinced that the difference can not be explained on the ground of immunity. He warns Europeans to keep on their guard, nevertheless, while he thinks the problem in England can not be solved without control over the sale and movement of bees from infested territory.

An interesting account of Japanese beekeeping, based on data from private communications and bee journals, is given by Doctor Zaiss in Die Bayerische Biene for December. For 1923 he found only 89 beekeepers reported as possessing more than 100 colonies each, while only the 225 next largest beekeepers had more than 50 colonies each. Japan had five bee journals in 1924. Foul brood is said to be unknown, but to make up for this there are several ferocious insect enemies, among the most dreaded of which is a large hornet. In fact, so serious is this latter pest that it is not uncommon for Japanese beekeepers to maintain guards armed with paddles to swat down these hornets at the time when they normally appear in largest

numbers. Their primary purpose in attacking a colony seems to be not so much to kill the adult bees as to steal the brood for the sake of obtaining food for their own young. Japan also has some poisonous honey. This has been well described by Doctor Tokuda, recently in this country.

Substitutes for pollen have long engaged the attention of beekeepers. Among other substances, meals have been used, and even milk as well. In 1923, Doctor Himmer, an assistant of Doctor Zander in Germany, began an experiment on the value of milk in this connection. His results appear in the December issue of Die Bayerische Biene. Comparing the chemical composition of milk with that of pollen, he brings out clearly the larger quantity of milk, as contrasted with any given quantity of certain common pollens, which is required to furnish an equal amount either of protein or of mineral content. Colonies given, for one month in early spring during two consecutive seasons, milk mixed with a honey and water solution showed so little more of an increase, relatively, in the amount of brood reared when compared with check colonies given only the honey and water solution that Doctor Himmer does not recommend milk as a pollen substitute. Although for the short time of the experiment milk proved of no less value than the honey solution, Doctor Himmer raises the question of its longer or more frequent use possibly proving injurious.

A movement is on foot in England to establish a National Honey Producers' Federation, one of the prime leaders being A. M. Sturges, author of Practical Beekeeping. In Bee Craft for December Mr. Sturges, in speaking of the new organization, says: "It is well known that vast amounts of honey, both in the extracted form and in sections, are being imported from abroad, and sold at a lower price than the British product. The value of these imports exceeded £200,000 in 1924, and will probably show a further increase in 1925. Many are of the opinion that these lands are honey-producing lands, capable of the development of beekeeping to the proud status of a national industry, and that it would be possible so to encourage the craft as to enable it to deal with the requirements of this country, and possibly also to export part of the produce to other countries." It is proposed that the program of the new federation include "the standardization of hives and appliances," "the marketing of produce and the purchase of supplies," "educational measures on really up-to-date lines," "more efficient disease control," and, lastly, "better cooperation between the existing associations." The governing council is to be composed of members selected by the federated associations in proportion to the membership of each.

The life of a man like Baldensperger of France, filled with experiences in so many different countries, can not help proving an interesting subject for biographers. This was demonstrated in the November issue of L'Apiculteur by Perret-Maisonneuve, who himself was recently brought into the apicultural limelight by his book on queen-rearing. As stated in Gleanings for November, these two beekeepers have been engaged in a controversy which grew out of the fact that Perret-Maisonneuve in his book and elsewhere, has maintained that the bee-louse, *Braula coeca*, is a pest which deserves serious consideration by beekeepers. In spite of their differences of opinion on certain beekeeping matters, it is gratifying to hear Perret-Maisonneuve referring to Baldensperger as one of the outstanding lights in French apiculture.

Braula coeca has been given considerable attention in beekeeping literature during the past few years, not only because of the Maisonneuve-Baldensperger controversy, but also because of interesting details of its life history worked out by Professor Arnhardt in Austria and others elsewhere, as well as the recent discovery that the louse has gained a foothold in Tasmania. In this country, too, it is coming into local attention, at least, since it has been found established in Maryland and Pennsylvania, while an item in Gleanings for January implies its presence in New York state. These facts have impelled Baldensperger to speak again from his long experience with the louse, and to make the definite statement, "We have never considered *Braula* as a pest." Although records exist of finding more than five dozen lice on a single queen, Baldensperger states that during his extensive experience in Mediterranean countries he has found as a maximum only seven specimens of *Braula* on a single bee, and even this number not very often. In his present location near Nice he finds *Braula* rather rarely, although he has occasion to examine several hundred colonies annually for foul brood. One of the European methods of ridding bees, especially queens, of *Braula* is by the use of tobacco smoke which apparently stupefies the lice, causing them to drop off while the bees remain uninjured.

Braula coeca, as a matter of fact, is found not only in the Mediterranean regions of Europe but in central and western Europe as well, at least.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California—At this date, January 5, the weather conditions and crop prospects are not all we beekeepers could wish. It is true we have had some nice rains and the grass and shrubs have responded very nicely. But we are fast passing through the period when we should be having our heavy rains if we are to be assured of a big honey crop. With the past three years of light rainfall most of us feel that we need early rains to get the very best results. Irrigation is being carried on regularly in the orange groves. During years of plentiful rains they often go several months without irrigating. We have had considerable wind this winter, which has a tendency to dry out the moisture much more quickly than it otherwise would.

Bees are working some on eucalyptus; also on filaree. Those with plenty of stores should build up in plenty of time for the early honey flow from the orange or sage if there is any. The weather has been almost ideal so far this winter. There have been only a few nights when the thermometer went as low as 32. Days have been warm, with nights just cool enough to make blankets feel good.

Honey markets seem slow and buyers not inclined to care to buy. There seems to be a feeling that the demand will be better a little later in the season. The State Beekeepers' Association meets in Santa Ana January 26-27, and it is hoped that a large delegation will attend from every southern county in the state.

To those readers not familiar with California and its weather and climatic conditions, it may seem strange that the writer so often refers to our rainfall. To date some parts of our southland have had already this season as much as six, seven, and some of the higher mountains as much as twelve inches of rain. But this is not an average. The rains so far have been what might be called uneven, not being at all regularly distributed. Some of our best honey-producing territory in a wet season has only had three or three and one-half inches thus far. This is only a good start. Many of our old-timers like to see at least ten inches before the first of the new year.

Corona, Calif. L. L. Andrews.

* * *

In Ontario—The winter here in Ontario to date, Jan. 9, has been one of ordinary temperature. A low dip of about 15 below zero for two days between Christmas and New-year's Day accounts for all the really cold weather we have had. For the past ten days the thermometer has ranged from 10 above to 45 above, and although I have not been near any of the bees lately I should judge that they are wintering normally. Very little snow as yet, and cars are running everywhere in this vicinity, though I understand that northern and western parts of the province have much more snow than we have here.

The market for sweet clover seed has collapsed to the point that it is hardly worth handling. As we have moved most of our bees here in the home section to sweet clover localities during the past few years, prospects are not very bright for a crop with us next year, as under present conditions not much sweet clover is apt to be left for seed purposes. While pasture fields yield some sweet clover honey in some seasons, yet as a rule this bloom is late and nectar gathered at that season all goes in with buckwheat. However, we are not doing any worrying about these matters beyond our control. It is said that worry kills more people than work does, and as I am not likely to ever work hard enough to kill myself, it certainly would be very foolish to let worry do the trick.

On page 37, January issue, in speaking of wintering, I mention abundance of good stores and a good queen as essentials. Needless to say, I should also include protection of colonies in some of the usual ways practiced here in the North. I am led to make this comment because of letters already received since January Gleanings was published, wherein the writers seemed to infer that I was placing no reliance on the matter of winter protection, although living in a country where the winters are severe. Yes, we certainly want colonies well protected, but not to be given almost unlimited packing as advocated by certain authorities some years ago. While the unlimited-packing idea can be proven to be apparently the correct thing from a theoretical standpoint, it certainly falls down good and hard when tried out in a practical way, as numerous commercial beekeepers would certainly testify.

Why the difference in actual practice in results obtained by treating foulbrood-infected combs with formalin and alcohol or with formalin and water, which many advocate to be just as good as the former? In the United States almost all reports are favorable, while here in Ontario possibly as many report

failure as success. As already told in Gleanings, our experiments with very badly infected combs were not at all satisfactory. During the past year a number of careful men wrote me stating that their experience tallied with mine. True, some reported success, but I got as many reports of failures as successes. Last spring the authorities at the Agricultural College at Guelph placed some 40 packages, if I remember correctly, on combs that had been badly diseased with American foul brood. Some of these combs had been treated with water and formalin, some with alcohol and formalin, and lots of combs in each solution were given different periods of time in the solution. Results were very disappointing, as disease appeared again in some of the colonies in each lot of combs treated.

Speaking from memory after hearing the results of the experiments read at our recent convention in Toronto, I believe that disease appeared again in about 40 per cent of the colonies under test, and the re-infection was just as high on combs treated with the orthodox formalin and alcohol as it was with those treated with formalin and water. No doubt the report could be obtained by writing Mr. G. L. Jarvis at the Ontario Agricultural College, Guelph, Ont. I regret that I did not take notes at the convention so as to be able to give more definite data. Materials were the best that money could buy, and they are certainly not prejudiced in any way over the question, so I feel that the results of the test are very disquieting, to say the least.

For the present, at least, we have decided to melt up all foul combs and treat nothing but super combs from colonies known to have been diseased, or other super combs that we are suspicious of. As often stated, I certainly had banked a great deal on this treatment for diseased combs, and it is very hard for me to give up hope altogether.

From what I can learn, honey is moving along fairly well, and I believe there is little in the hands of producers at present. I have had some inquiries from producers asking where they could get some good honey to fill demands, but I know of no large quantities any place. I notice in a number of newspapers that the Co-operative Association is doing quite a lot of advertising lately in the way of bringing honey before the public —a move in the right direction surely, and a big problem that every producer should be willing to help solve to the best of his or her ability. J. L. Byer.

Markham, Ont.

In Northern California—

One of the leading industries of the state is now cotton. Last year 130,000 bales was the output, as compared with 80,000 bales the year before. This winter's cotton harvest amounted to $16,500,000. The Lower San Joaquin Valley represents the center of the cotton district, but cotton fields may be found from the Imperial Valley up to the rice fields in the Sacramento Valley. Of course, cotton was grown in the Imperial Valley and to a slight extent in Los Angeles and San Diego counties over fifteen years ago; but the recent unprecedented growth in the big valleys has proved a big surprise to the California farmer himself. Many big dairy and raisin sections of the state are now vast cotton centers, and beekeepers have moved in on the cotton. Their experiences have been varied. Some report good crops, while others report no yield at all.

It will be well to give a few words regarding cotton as a honey plant. In the southern states and in Arizona and Texas as well it has the reputation of being quite uncertain as a nectar-yielder, and, like so many other plants, it must have certain weather conditions before it will secrete. Although this condition is beyond our control, we do know, however, that cotton will secrete much better on black and heavy soil than it will on a light sandy soil. Not only this, but the color of the honey is lighter on the black soil. Some of our river bottoms where we have heavy soil ought to prove ideal for a good yield. We have yet to determine what are our best weather conditions for cotton secretion, owing principally to our long rainless period during summer. Cotton yields best where optimum growing conditions are present. It has a very long blooming period, being in flower from early summer till very late fall. The honey is light amber to white, partakes strongly of the odor of the plant when first gathered, but loses this characteristic odor to a considerable extent when thoroughly ripe. In body it is very heavy and is prone to early granulation. In the southern states, if cotton honey is not allowed to ripen thoroughly it shows a marked tendency to ferment. The dry atmosphere in our valleys need bring no cause for worry to our beekeepers on this score. It behooves us to get all we can out of the cotton plant, for cotton apparently is destined to become one of California's principal crops. The cotton produced here is of exceptional quality, and another point in our favor is that the state is free from boll weevil. Cotton is being ginned in large factories in Los Angeles and Oakland, and there

are cotton-seed-oil mills in the latter city and also in Fresno.

The "five-ounce jar of honey," mentioned in December on the editorial page and again by Mr. Crane in the January issue of Gleanings, certainly has its place in the sun in honey merchandising. Like other beekeepers, the writer prefers to make his 5-pound pail his most popular package. This size receives more advertising, etc., but the small glass jar—even the 2½-ounce size—has a ready sale from year to year. Many grocers push this small package amongst their housekeeping-for-two clientele, saying, "nice size for a picnic luncheon," or "for your waffles Sunday morning." The remarks carry conviction, too, for the small size indicates at once a saving in labor—nothing sticky to put away after a meal; and it is a fact that not a few customers telephone for a 2½-ounce jar of honey every Saturday, having in mind waffles for breakfast the following morning. For the past seven years the writer has sold each year several tons of honey packed in the 5-ounce size; and, although it does not sell like the 15-ounce, it has, nevertheless, its place on the grocery shelf. The point to bring out here is that, if the small package were withdrawn from the market, there would be lost practically just that amount of honey sales to a certain class of customers. Quite likely a small jar of syrup would take the place of a 5-ounce jar of honey. No, it is our best policy to supply the people with what they want.

Monterey, Calif. M. C. Richter.

* * *

In British Columbia—Complete returns for arriving at the estimate of British Columbia's honey crop for 1925 have now come in. The results show that the average production per hive, spring count, was 41 pounds, as against 46 pounds for 1924, 32 for 1923 and 61 for 1922. The total estimated number of beekeepers shows a small increase over 1924, namely, 2426 as against 2408, and the total estimated number of hives an increase of about 900, namely, 15,505, as against 14,604. The total honey crop is estimated at 638,319 pounds, compared with 679,289 pounds for 1924. The beeswax produced is estimated at 9,500 pounds, and the capital value of bees, hives, and other apiary equipment is estimated to be $387,625.

The Government Demonstration Apiaries in the different parts of the province, which were first started in 1921, continue to serve a very useful purpose as a ready means of imparting information to beekeepers, more especially beginners, by showing what equipment to use and the best methods of management for obtaining good results in honey production. Anyone wishing to take advantage of this means of obtaining information can visit any of these apiaries at any time for this purpose. The following is a summary of results from these apiaries for 1925:

Fraser Valley—Number of apiaries, 12; number of hives, 35; surplus honey taken, 3272 pounds; average per colony, 93 pounds; increase made, 7.

Kootenays—Number of apiaries, 9; number of hives, 22; surplus honey taken, 1741 pounds; average per colony, 79 pounds; increase made, 7.

Okanagan, Shuswap, and Thompson Valleys—Number of apiaries, 3; number of hives, 11; surplus honey taken, 2182 pounds; average per colony, 198 pounds; increase made, 5.

Vancouver Island—Number of apiaries, 1; number of hives, 2; surplus honey taken, 156 pounds; average per colony, 78 pounds.

Total—25 apiaries; 70 colonies; surplus honey taken, 7351 pounds; average per colony, 105 pounds; increase made, 19.

Three hundred and seventy-seven colonies in 72 apiaries in the province were found to be affected with American foul brood in 1925, and 107 with European foul brood. The latter compares with 267 in 1924 which shows a considerable improvement, and a wonderful improvement over conditions a few years ago. The number of hives found with American foul brood is about the same as in 1924.

Distances are so great in British Columbia, and consequently the time taken up in traveling is so long, that it makes work slow and not very easy of accomplishment. W. J. Sheppard.

Victoria, B. C.

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In Northern Indiana Many colonies in this locality went into winter quarters light in stores. For this reason it is probable that there will be considerable mortality among bees before nectar is again available. This is especially true of those in upland districts. Along river bottoms, conditions are much better. Bees in cellars properly insulated are in excellent condition thus far. Most small beekeepers hereabouts winter their bees outside without adequate protection, and of course annual losses are an important consideration. Difficulty in wintering in this latitude, northern Indiana, is due chiefly to improper cellar construction. Cellars partly above ground and not well insulated may become too warm, causing colonies to become restless, and at other times too cold, resulting later in dysentery. U. S. Department of Agriculture reports state that in the intermountain region bees have been removed from cellars owing to high temperature. It would seem that there should be no necessity

for so doing where cellar conditions are as they should be.

A very interesting convention of the Indiana State Beekeepers' Association was held December 17-18 at Indianapolis. A beekeepers' short course will be given at Purdue University, February 15 to 18, inclusive. The American Honey Producers' League will hold its annual session at Cincinnati February 2-3. These meetings are of great value to those who wish to keep up with the procession in beekeeping, and yet only about one beekeeper in a hundred attends beekeepers' meetings. Many large producers never go to a convention. They do not use up-to-date methods in production, and when it comes to selling each one tries to undersell the other. By so doing a point is soon reached where no one makes a profit, and nobody can afford to buy at wholesale from the beekeeper when beekeepers retail at wholesale prices. However, there is little gained by condemning the price-cutter. What is needed is education along the line of business methods in marketing. The Northwestern Indiana Honey Producers' Association is sending out marketing information to all beekeepers in this part of the state, as far as funds will permit. These letters include instruction in regard to grading, packing, and local distribution, as well as recommendations as to retail prices.

Producers who are holding to association prices are selling about the usual amount of honey locally, and nearly all will dispose of their stock before the new crop is available. Those few who undersold the market are about done and, of course, are losers to the extent of about 20 to 25 per cent of what they might have received.

There was a short crop of honey in Indiana in 1925, but those of us near Chicago are operating at a disadvantage owing to the large surplus shipped in from the northwest to the Chicago market. By means of wholesale truck delivery this honey radiates out to a distance of 50 miles or more.

Valparaiso, Ind. E. S. Miller.

* * *

In Alabama—The winter up to this time has been more severe than usual, the mercury dropping to 11.9° above zero on Monday, Dec. 28. This is the coldest weather in December in forty-five years, according to the reports of the weather bureau. If this kind of weather continues throughout January and February it will mean quite a bit of saving in stores and be of benefit to the beekeepers.

On November 30 Mr. George Rea, extension apiculturist of Pennsylvania, visited Montgomery County, and in company with Mr. W. A. Ruffin, Extension Entomologist of Alabama, Mr. Thomas Atchison, State Inspector, Mr. James Allen, president of the Alabama Beekeepers' Association, and the writer, visited the apiaries of Mr. Jasper Knight, at Hayneville, and after an elaborate dinner with Mr. and Mrs. Knight, visited the apiaries of the Hayneville Apiaries Co. We then returned by way of Tyson and visited one of the out-apiaries of Mr. M. C. Berry and the queen-yards of J. M. Cutts & Son.

Mr. Rea was favorably impressed with the black belt of Alabama as a section adapted to the queen and package industry, and expressed the opinion that package bees produced here where they must be shipped before the main honey flow were superior to those produced in some other sections where the honey flow comes early enough so that packages may be shipped after they have produced a crop of honey and the bees are worn out from their labors in the field.

Bees generally have abundant stores and are in good condition. The extreme cold has not injured the clover, and prospects for the coming season are good.

Montgomery, Ala. J. M. Cutts.

* * *

In Porto Rico—The honey exported to the mainland the past year (1925) was just a little better than one-half that in 1924. The crop of 1924 was 2,772,583 pounds, which was sold at about six and two-tenths cents a pound. The crop for the first ten months of 1925 (report for the last two months not yet available) is 1,491,080 pounds, which was sold for about seven and two-tenths cents per pound, or one cent a pound above the 1924 price.

Many of the bee-men here looked for an extra good yield last season. The weather conditions were promising, and most of the Island had sufficient rainfall to give the necessary growth for nectar secretion. However, the blossoms did not yield the expected amounts. It is to be hoped that 1926 will be more bountiful to the beekeepers in this section of the world. From all reports I have gathered, Cuba, like Porto Rico, did not secure as large a crop as in 1924.

A sharp rise in price should be looked for after the first of the year, as the 1925 crop (with the exeption of a few barrels here and there, whose owners are holding for a better price) was sold long ago. The price offered on the Island still clings around 65 cents a gallon. Unless there are large shipments to the

port of New York from Central and South America, the price must rise unless the buckwheat crop of the northeastern states is large enough to depress the market on tropical honeys.

There are two encouraging developments which promise to better conditions on the Island. One of them is the tendency on the part of apiary owners to seek other locations where there are not so many bees, many sections of the Island being heavily overstocked. The other is the prospect of selling some of the excess colonies to northern beekeepers. The up-to-date beekeepers of Porto Rico are watching the progress of this latter development, and if it proves to be a successful venture, no doubt 1927 will show quite a number of offerings of bees from Porto Rico for the northeastern beekeepers to choose from.

Taxes in Porto Rico are very high and there seems to be no relief in sight. All merchants are assessed a direct tax on every dollar's worth of goods they sell. Naturally the consumer foots the bill ultimately.

Aibonito, Porto Rico. P. G. Snyder.

* * *

In Montana—The State Beekeepers' Association is holding its annual meeting in Billings, Mont., January 11-13. The executive committee feels that a fine program has been arranged, and, unless weather conditions change, a good attendance is expected. Several important matters will come up for discussion during the business session. Due to financial conditions here in the state, the State College has had to discontinue the beekeeping work carried on for the past four years.

The fund for inspectional purposes has also run out, so that the entire beekeeping work is suspended until new funds are available. Action will be taken at the annual meeting to keep this work going. Provisions will have to be made to keep the machine going, otherwise everything will have to be dropped until the prosperity of the state returns.

Weather conditions in Montana this winter have been exceptionally favorable for bees. Bees have had an occasional flight and the temperature has at no time been severe enough to harm well-protected and strong colonies. A report handed out by the State College at Bozeman shows that in that district the temperature has never dropped below 2° below zero since January 1, 1925.

The writer has been much interested in the arguments presented regarding the quarantine ruling which several of the states now have in force. While Montana comes under this category, yet it is possible to ship in bees from the South under certain conditions. The law provides that the commissioner of agriculture may make such regulations as are necessary to protect the beekeeping industry. It is within the power of the Commissioner of Agriculture to allow bees to come into the state providing he is satisfied that no harm will be done. I personally believe that if our southern friends were acquainted with our conditions as they exist the harsh criticism which has been given out would have been withheld. In the first place, the state officials had nothing to do with putting the quarantine regulation into effect in this state. The request came from the commercial beekeepers. Since it was their desire, the Commissioner of Agriculture responded. The reason for taking this action was the fact that each year we have beekeepers who ship their bees into this state for the summer crop and then move out to another state for the winter crop. These men are not paying taxes into the treasury of any one state and are no respecters of the rights of permanent beekeepers within the state. Their main object seems to be to produce as much honey as possible and then dump it on the market. Unless these men were governed by a quarantine law such as we have there would be no means of controlling them. The beekeepers of Montana do not object to others coming to this state providing they will become permanent residents and take up new territory. We trust that our southern friends will consider our side of the question. O. A. Sippel.

Bozeman, Mont.

* * *

In Michigan—Bees in some sections of the state had an opportunity to fly during the first week in January. This improved the prospects for good wintering for those colonies that were loaded with a poor grade of fall honey.

The Department of Entomology will give a two-weeks beekeepers' short course February 8-19. The course will cover, as completely as time will permit, a discussion of all of the basic principles of commercial beekeeping. A feature of the course this year will be the inauguration of Visitors' Day, Feb. 18, when a special program will be given for the benefit of those beekeepers who do not feel able to attend all of the course. Aside from the members of the department who regularly teach beekeeping, assisted by members of the faculty who will speak on subjects connected with beekeeping, the beekeepers attending the short course will have an opportun-

ity to hear Mr. Jay Smith, queen-breeder and lecturer, during the second week of the course.

In going over the records recently, it was found that we have here in Michigan seventy-three beekeepers whose total production runs slightly over two million pounds of honey annually. It would seem that here is the nucleus for a powerful marketing organization.

The fifty-sixth annual meeting was well attended and very lively. The slogan "Honey for Health," was adopted by the association for use on advertising matter and letterheads by members.

The honey market is rather quiet—that is, few large lots are moving. However, local sales are more satisfactory and some beekeepers are all sold out. During Honey Week, C. L. Porrett, of Port Huron, placed a demonstration hive and honey exhibit in the front window of a leading grocery store. He gave each of the nine clerks a jar of honey. Results: He sold at this store, during Honey Week and up until December 15, 275 5-pound pails, 22 2½-pound cans, and two cases of 12-ounce jars. Mr. Porrett feels well repaid for his trouble in arranging the exhibit.

John Worsfold, Grand Haven, who sells honey from house-to-house during the winter months, offers a five-pound pail of honey as a prize to the family who uses the most of his honey during the season. Two years ago the prize was given for a seven-pail consumption. Last year one family bought ten pails to win the prize.

Speaking before the recent annual beekeepers' meeting, Jos. Knapp, proprietor of a big Lansing department store, said that the honey displayed in his self-serve grocery department was about the poorest appearing goods in the entire store, and suggested that beekeepers get busy and dress honey up properly before putting it on the grocers' shelves where it will have to compete with the glittering labels of nationally advertised brands. That shows what the live storekeeper is thinking about honey, and the point should be well taken.

East Lansing, Mich. R. H. Kelty.

* * *

In North Dakota—The fall was very unfavorable for bees in North Dakota, October being especially disagreeable, so that in general the bees in cellars are not in as good condition as at this time last year, that is, there are probably fewer younger bees present in the hives at this time.

National Honey Week brought out several good honey displays in this vicinity. If the observance of this week is general over the country, and then if beekeepers will see to it that such activities are not confined to one week, the advertising value will be great. Honey should be kept before the public 52 weeks in the year. A little judicious advertising all along brings much better results than the greater effort for just a short time, but both help.

The honey market has not been good this year and there has been a considerable amount of price-cutting. A marketing association has been formed and has been granted a charter, but has not had opportunity to function to any extent as yet. M. C. Tanquary.

Fargo, N. D.

* * *

In Wisconsin The honey market, after having passed through a period of deplorable price cutting seems to be reviving somewhat, and those who have been holding their honey are feeling somewhat more optimistic.

The officers of the Wisconsin State Beekeepers' Association feel that the association is doing a real service to the beekeepers, as over $7500 passed through the secretary and treasurer's office. The business items included dues, advertising, labels, honey containers, stationery, movie slides, posters, honey booklets, honey sales and other minor items. The officers elected for the coming year were: Mr. James Gwin, president; George Jacobson, vice-president; Wm. Sass, Jr., treasurer; and Miss Arlene Weidenkopf, secretary. The convention passed a resolution, supporting the American Honey Producers' League, and elected a delegate to attend the convention at Cincinnati in February. The convention voted to co-operate with the university and the State Depratment of Agriculture in holding a Chautauqua in honor of the Dadant family. This Chautauqua will be held from Aug. 16 to 20, 1926, at Platteville, Wis. It is hoped that the states of Iowa, Illinois, Minnesota, and possibly Missouri will co-operate in helping to hold one of the biggest beekeepers meetings that has ever been held in the middle west.

Reports from beekeepers indicate that the bees have gone into winter quarters this year with more ample stores than in previous years. No doubt this is due to the fact that a large surplus crop was received and the beekeepers felt more able to leave a better supply of stores for the bees. H. F. Wilson.

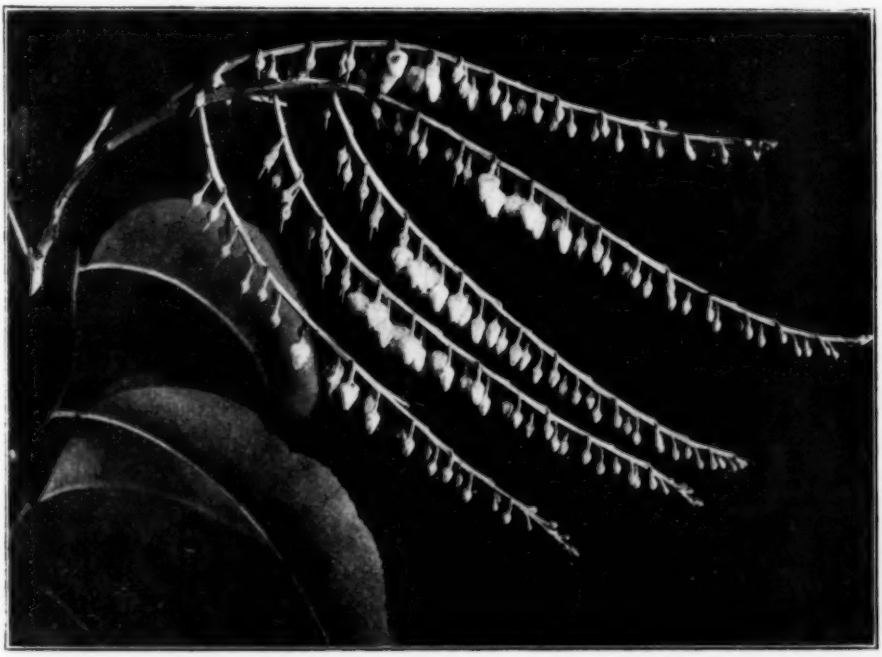
Madison, Wis.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Sourwood a Copious Yielder

Sourwood blossoms open from July 10 to July 20, according to altitude. In our section (the mountains) it opens about the 20th, and the higher the altitude the better it thrives. The mountains are literally blanketed with it. The secretion of nectar in sourwood is remarkable, and drops can be shaken from each bell. Only a few bells open at a time, beginning at the top of the stem, but as the first bells fall off, others open down the stem. The illustration shows all stages. It stays in bloom about two weeks, and so profuse is the honey flow that 50 to 100 pounds of surplus from a strong colony is not unusual, depending largely on local conditions. Often in one part of a county there is a heavy flow, and in other portions a light one, it being very sensitive to weather and moisture conditions. L. E. Webb.

Morganton, N. C.



Sourwood bloom in its natural position as it hangs on the tree, bell down. Sourwood produces honey so freely that it can be shaken from the blooms in showers.

Advice to Beginners

The beginner is told to buy strong colonies. But how is he to know when he is getting a strong colony? There is one good way, and that is to buy from a reliable beekeeper, one that knows bees from yellow jackets. If you buy from one that just lets his bees have their own way, swarming at will, you are taking chances on them and chances are two to one that you will get a little colony. If not you will get an old worthless queen that will only live, not produce. A mistake I made was not feeding in October. The fall is the only time to feed for winter stores, or consuming stores. Bees that go into winter short of stores come out in the spring short of bees, and before they can build up the honey flow is over. Of course, some feed for stimulating brood-rearing in the spring. That is a good practice here. But they should be given sufficient stores in the fall to carry them over. The beginner learns at the cost of dead bees many times. I did. I didn't pay much attention to what the beekeepers said. But such an attitude never pays except in regret. I, like many other beginners in beekeeping, thought that there was nothing to do but let the bees alone. W. C. Rimmer.

Statesville, N. C.

Colonies Strong Too Early I would like to have you get some experienced man to write an article on producing honey in the sweet clover belt. It seems to me every article is on how to build up the bees for the early honey flow. As we never get a surplus here till about the 20th of June to the first of July, our problem is to keep them from reaching the peak of brood-rearing before the commencement of our flow.

I have tried packing them well and leaving them with just the protection of a good windbreak with only one thickness of tarred felt as covering; and while the well-packed hives came out of the winter stronger, they would try to swarm the fore part of June, while the weaker colonies not packed would generally build up by July first and store just as much as those that I could not hold down till the honey flow. There is a question in my mind whether under our conditions it pays to pack other than with paper as spoken of above. If there were a way to hold back the stronger colonies it might pay. But I can not swap brood freely here, for I have had to shake as high as 50 per cent of my colonies this last year for American foul brood, and even after doing that produced nearly 200 pounds per colony.

Sargent, Neb. Harold I. Perrin.

[Why not give adequate winter protection, then divide the colonies about the first of May, giving the queenless portion a young laying queen, and build up both for the honey flow? If increase is not wanted, the colonies can be reunited in the fall after killing the old queen.—Editor.]

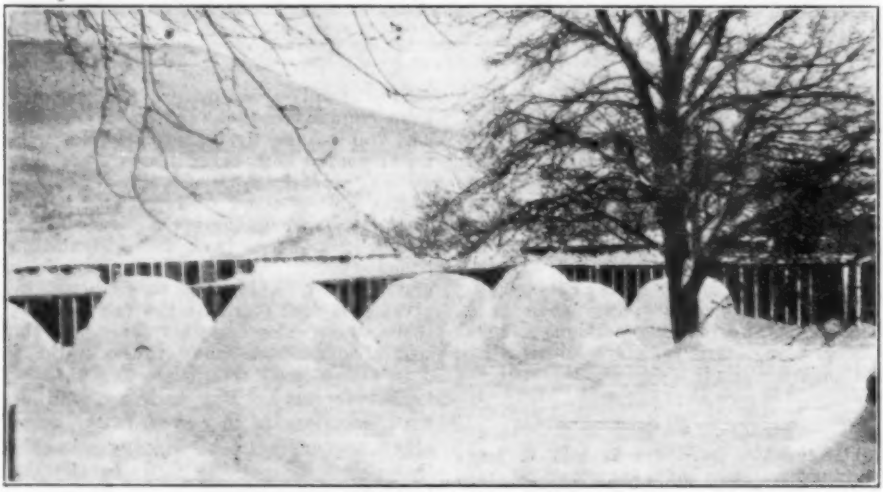
Immunity Against American Foul Brood We are skeptical about the immunity of the bees reported by Bruce Lineburg (Gleanings, Vol. 53, pages 709-710). It is not unusual for but a few colonies to do all the robbing in a large apiary. Sometimes, no doubt, a few colonies would take no part in the activities of what appears to be a general robbing, which may have happened in the reported cases of immunity. In dealing with disease and immunity experiments, absolute certainty of diagnosis should be obtained through microscopical examination of the organisms and cultural growth in media. This was apparently lacking in the observations referred to above and the diagnosis can therefore be questioned. Infection of these immune bees with known organisms may upset the conclusions. However, immunity to many organisms has been developed by many animals, and it is to be hoped that this will take place with the honeybee in respect to American foul brood organisms.

What does "Old Drone" say about "immunity"? G. H. Vansell.

Davis, Calif.

Bees Buried Under Snow I am inclosing a photograph of the snowfall that we had here on January 30, 1925. The snow fell to a depth of 30 to 36 inches. The mounds in the photo are on top of two-colony winter cases. The tops of these cases are about 3[illegible] inches above the ground. As will be seen, they are completely covered, the bees being none the worse for it.

Naples, N. Y. Albert J. Braun.



Bee buried under snow. Apiary of Albert J. Braun, Naples, N. Y., after a heavy snow.

Top—Apiary "Ytaly," located in the center of the city of Puebla, Mexico. Average production per colony, 120 pounds of extracted honey. All pure Italian bees. In the center show cement block patented "J. R. C." Hive supporters. Middle—Apiary in the tropics. Bottom—Another of the apiary "Ytaly," owned by Jose Rivero Carvallo, Puebla, Mexico.

TALKS TO BEGINNERS

Geo. S. Demuth

In the southern portion of the United States, beginners who have not already obtained their bees should do so soon. There are several advantages in having possession of the bees some time before the main honey harvest, unless the colonies are in the hands of an expert beekeeper who will take proper care of them, since a little neglect in early spring sometimes results in the colonies not being in good condition later when they should store surplus honey. Another advantage in obtaining the colonies early is the greater opportunity for the study of the bees themselves during this important period.

While in the extreme south the beginner should obtain his bees this month, it will be just as well for those farther north to wait until March or April, and in the northern tier of states it is not necessary actually to come into possession of the bees until about the first of May. However, even in the northern tier of states there is no objection to purchasing good colonies of bees and moving them home even in February.

To move a colony during cold weather, all that is necessary is to close the entrance with a piece of wire screen and fasten the hive parts together so that no bees can get out. The hive should be placed where it is to be permanently located on arrival at the new location and the screen should be removed immediately, or as soon as the colony quiets down after moving so that the bees leave the screen.

Selecting Good Colonies

As pointed out last month, if bees are purchased during cold weather the colony should be examined to determine its strength and the amount of honey present. Many colonies are practically worthless at this time on account of being weak in numbers or short of food. These are the two most important things to look for at this time. By removing the outer cover and the packing at the top (if any), then lifting the inner cover, it is possible to determine the strength of the colony. In some cases it is easier to look into the hive from below. When the temperature is near freezing a good colony of bees should occupy at least five or six of the spaces between the combs. In a double-walled hive having packing between the two walls, the cluster should occupy six or eight of these spaces. The amount of honey can be determined approximately by weighing the hive as it stands and comparing it with the weight of an empty hive. The combs when empty weigh about one pound each, which must be added to the weight of an empty hive in making this comparison. A well-provisioned colony should have not less than 25 pounds of honey at this time. While colonies that have less may not suffer from want of stores if the spring is favorable, they may have to be fed if the spring is unfavorable.

In purchasing colonies the beginner should insist upon these standards unless the price is reduced accordingly. Weak colonies that are able to pull through

No. 1.—Looking into a hive from the top. This is a strong colony since it occupies seven spaces between combs during cold weather in February.

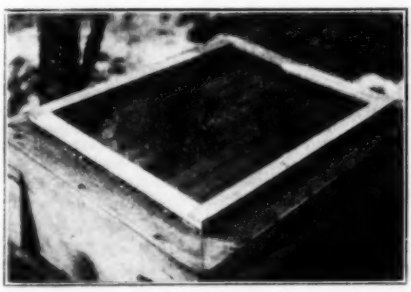
the winter and early spring can be strengthened by adding a package of bees from the South, and colonies that are short of stores can be fed in February even in the North if necessary. But colonies that need either more food or more bees should be avoided if possible when purchasing bees.

Where there is a choice between a colony that was a last season's swarm and the parent colony, it is usually better to take the parent colony if it is equally strong in number of bees and is well supplied with honey, since the parent colony is the one having the young queen. Swarms that were hived last summer can usually be distinguished from other colonies by noting the color of the comb. A newly hived swarm has whiter combs than parent colonies or colonies that did not swarm, unless the swarm was hived on old combs.

There are many other things that should be noted in selecting colonies, such as whether the combs are straight and the cells nearly all worker size, such as are obtained when the combs are built on full sheets of foundation; whether the hives are of standard size

and well made, and whether the bees are of good stock or scrub stock. In some of these the beginner will have to take the word of the owner of the bees, but inquiry should be made concerning them.

Probably in most cases it is best for the beginner to purchase good colonies in good hives from a reliable beekeeper, even though the colonies cost two or three times as much as colonies in old dilapidated hives or in boxes or gums. However, the ambitious beginner who would rather have a smaller outlay of capital and make up for this by a little extra work and expense later may find a bargain in colonies of bees in his neighborhood. Sometimes neglected colonies can be purchased for $2.00 or $3.00 each. Often such colonies are in good condition as to strength and amount of stores, but may need to be transferred into better hives. The beginner need not hesitate even to purchase bees in boxes and gums if the colonies are strong and heavy with honey, then transfer them to modern hives during fruit bloom in the spring. Directions for doing this will be found in most books on beekeeping and in state and government bulletins. There is a peculiar satisfaction in purchasing unproductive colonies and making them productive, that is well worth while for those who have a little time to devote to such work.



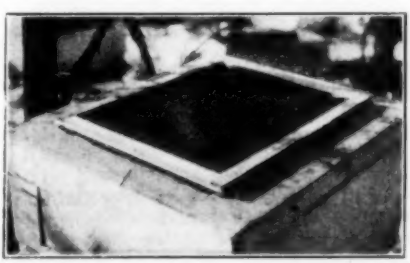
No. 2.—This is a medium-sized colony occupying six spaces between the combs when outside temperature is about freezing.

Activity of Bees During Cold Weather

Bees are able to survive the long winters of the north only by huddling together in a compact cluster and suspending all of the activities of the hive except that which is necessary to keep warm. The outer crust of the cluster is more compact than the inner part, this crust being for the purpose of confining the heat as much as possible. On looking at the bees which form the crust of the cluster during cold weather, it will be noted that the bees are very quiet, no movement being visible unless the colony is considerably disturbed. As long as the temperature within the hive but outside the cluster remains near 50° Fahrenheit the bees inside the cluster are also quiet; but when the temperature within the hive goes lower the bees within the cluster become active in order to generate heat. The temperature within the cluster therefore is increased as the temperature within the hive goes below 50°, and is again decreased when the temperature within the hive rises. In this way the temperature within the margin of the cluster is maintained at about 57°, while the temperature within the cluster varies from 60° to 90°, depending upon the amount of heat generation required to keep the margin up to the required 57°. In this way the cluster temperature is regulated with greater precision than the rooms of our houses can be regulated by the most delicately adjusted thermostat.

The manner in which they do this should be understood by every beginner, and those who already have their bees will find this a most fascinating study. Even though the books advise against opening the hive during winter, the possible injury to the colony is so slight in comparison with the inspiration and information to be gained that the beginner should peep into the hive occasionally during cold weather.

The size of the cluster varies as the temperature varies. During extremely cold weather the cluster is more compact and therefore smaller, and as the temperature rises the cluster expands. Inside the cluster nearly every vacant cell in the comb is occupied by a bee which lies quietly for days at a time. In fact, the dominant instinct within the hive during the winter is that of the greatest possible degree of quiescence, since it is only by conserving their energy that honeybees are able to live through the long winters of the North until brood-rearing can again be safely resumed.



No. 3—Colonies occupying five spaces between combs when outside temperature is about freezing. Colonies smaller than this would be classed as weak.

GLEANED BY ASKING

Geo. S. Demuth

Winter Passages Through Combs

Question.—Is there anything gained by making holes through the combs to permit the bees to pass from one comb to another during winter? Some of the bees in my colonies perish on outside combs during the first cold spell in the fall. Fayette Lee.
Minnesota.

Answer.—In the early days of the modern hive, winter passages through the combs were thought by many to be necessary for best results in wintering. Langstroth, in his book, "The Hive and the Honeybee," advised that a hole an inch in diameter be cut in the middle of each comb about one-third of the distance from the top, this being done so late in the season that the bees would not fill these holes with comb. Later this practice was abandoned almost entirely and a device known as the Hill's device was placed above the frames to hold the quilt, then so commonly used, an inch or more above the top-bars, the theory being that the bees would cluster in this space and thus have a free passage from comb to comb. However, bees get along very well without either arrangement, especially if the colonies are strong and well protected, and both of these methods have been abandoned. When bees are wintered in two stories the cluster can expand or contract laterally through the space between the upper and lower sets of combs.

Advantages of Double-Walled Hives

Question.—Would it be better to use single-walled hives and pack them for winter or use double-walled hives with the packing built in?
Iowa. Paul L. McMullin.

Answer.—While the first cost of double-walled hives is greater, they are, in the long run, less expensive than the single-walled hives in most localities, since the expense and labor of giving winter protection is largely eliminated. Double-walled hives also afford protection from extremes of temperature during the summer. On the other hand, many beekeepers prefer to use single-walled hives on account of the smaller investment, preferring to pay for winter protection from year to year even though it may cost more during a period of several years. Furthermore, beekeepers who are so located that their colonies must be moved frequently prefer to use single-walled hives on account of the greater convenience in moving.

Number of Cells in Standard-Size Combs

Question.—How many worker cells are there in the comb in a standard-size frame?
Tennessee. W. T. Nickens.

Answer.—A comb that is well attached to the sides and bottom-bar of the frame may contain as many as 7300 worker cells. The actual number of worker cells in a standard-size comb is usually less on account of slight defects, especially if the combs have been damaged in such a manner that some drone comb is built.

Duration of Life of Worker Bees

Question.—What is the average length of life of worker bees? Hoyt Bishop.
Alabama.

Answer.—This varies in accordance with their activity as well as other factors which are not well understood, such as diseases, accidental death and the strain of bees. During the active season the average life of worker bees is from six to ten weeks, but during the winter bees that remain quiet may live six to eight months or even more.

Number of Supers Required for Each Colony

Question.—What is the minimum number of shallow extracting supers having frames 5¾ inches deep that is required for each colony?
Illinois. Jacob Gleich.

Answer.—This depends upon the locality and the season. In some localities where the honey flow is slow and of long duration, even the largest crop could be harvested with only two supers per colony by taking away and extracting the honey as it is finished and returning the supers to the hive. In other localities, where the honey flow is short and rapid, making it necessary to have enough supers to contain almost the entire crop, it would not be safe to provide less than six or seven supers. Again, during a poor season in a locality of the latter type, one super may be ample while during a good season seven supers may not be enough.

Jumbo Hives for Preventing Swarming

Question.—What percentage of swarming can be prevented by using the Jumbo hive instead of the standard-size hive?
Ohio. Harry G. Ennes.

Answer.—If colonies are wintered in a single story of each size of hive and comb-honey supers are given on the approach of an early honey flow, most of the early swarms would, as a rule, come from the standard hives; but if the honey flow continues swarms would later begin to issue from the larger hives. In other words, swarming takes place later, as a rule, in the larger hives. If the season is short the percentage of colonies that swarm in the standard hives might be considerably greater than that of the Jumbo, but if the season is of considerable duration there may not be much, if any, difference. However, by giving a second story of dark combs before the colonies become crowded in early spring, then properly managing them through the season, there is practically

no difference in the percentage of colonies that swarm from the two types of hives under ordinary conditions.

Lye for Disinfecting Hive Parts

Question.—How long is it necessary to boil empty hives or hive parts in a lye solution to clean them of American foul brood? How much lye should be used in making such a solution?
Tennessee. V. S. Gray.

Answer.—Lye is not primarily a disinfectant for American foul brood, although it may act upon the outer covering of the spores, thus reducing the time necessary to kill them by heat. Since the lye removes propolis and wax as well as any honey that might be on the hive parts, the surface is cleaned and no doubt most of the spores are removed. Probably fifteen minutes would be long enough to boil hive parts in a lye solution to disinfect them. It is the continued high temperature that actually kills the spores of American foul brood, instead of the lye. An ordinary can of concentrated lye is sufficient for a wash boiler full of water.

Bees Restless in Cellar

Question.—When bees become restless in the cellar, should they be taken out the latter part of February and packed on their summer stands?
Ohio. C. J. Appeldoorn.

Answer.—If the bees are restless as a result of consuming poor stores, a cleansing flight is the only real remedy. As a rule, when they become quite restless in February or early March the trouble has gone so far that poor wintering may be expected even though they are put out for a flight. For this reason the giving of winter flights to restless colonies being wintered in the cellar has not always proved satisfactory. Colonies that have so wasted their energy because of consuming too much stores of poor quality already have their vitality so depleted that the bees die off rapidly when exposed to the lower temperatures outside. If the restlessness is brought about by the cellar warming up too much on warm days, the trouble is not so serious and can easily be remedied by cooling the cellar by opening the windows at night and banking up the walls on the outside, so that the temperature will remain more nearly constant. In either case it is usually better to leave the bees in the cellar until the latter part of March.

Odors of the Hive

Question.—Please describe the different odors, except that from foul brood, that come from beehives. J. W. Glenn.
Illinois.

Answer.—There are so many different odors emanating from the beehive under various conditions that it would not be possible to describe all of them. For instance, the hive odor while brood-rearing is in progress is different from that during the winter when brood-rearing is not in progress. Again, the odor emanating from the hive changes as the bees work upon different flowers. When they are ripening nectar it is often possible to tell what kind of flowers the bees are working on by walking through the apiary. Odor apparently is an important factor in the economy of the beehive, but most of these odors which affect the bees can not be distinguished by man. For instance, when a swarm is being hived, the bees which discover the entrance and begin entering the hive set up a peculiar hum apparently calling their comrades; however, it is now thought that the hum is not what calls their comrades, but that the vibration of the wings drives the odor from these bees to the others and that they are informed that an entrance has been found by means of the odor instead of by the sound. Apparently, also, the bees distinguish the members of their own colonies by means of odor to a large extent, so the defense of the hive is to this extent a matter of odor. In introducing queens, it is thought that odor is an important factor and that the bees are antagonistic to the new queen because of her different odor.

Moving Bees During Cold Weather

Question.—I have purchased five colonies of bees one-half mile from my home. Can I move them during freezing weather, or will it be better to wait until spring? Or should I move them to a more distant point, then bring them back so that the bees will not return to their original stand? A. B. Silliman.
Iowa.

Answer.—Bees can be moved during this month without doing them any particular damage. Of course, they will be disturbed while being moved and will therefore consume a little more honey and wear themselves out a little faster than if not disturbed. However, moving them only a half mile will be a slight disturbance and the bees will soon quiet down after being placed on their new stand. It will be better to move them now than to wait until spring, since fewer bees will be inclined to return to their old stand than if left until they fly freely every few days in the spring. It will therefore not be necessary to first move them to a more distant location, but they can be moved direct.

Snow at Entrance of Hive

Question.—Is it necessary to keep the snow away from the entrance of the hive?
Ohio. L. A. Snyder.

Answer.—Loose snow covering the entrance does not harm the bees. In fact, if the hives are entirely covered with snow the bees will not smother as long as the entrances are not closed with ice. Colonies that are wintering well need but little air, but if the entrances should be clogged with ice and the bees discover that they are imprisoned they will begin to worry and thus wear themselves out rapidly.

A. I. Root's Story of His Own Life

Wisdom is as good as an inheritance: yea, more excellent is it for them that see the sun. For wisdom is a defense, even as money is a defense: but the excellence of knowledge is, that wisdom preserveth the life of him that hath it.—Ecc. 7: 11-12.

While many thought that all the colonies that died in the house apiary starved, this was a mistake, for not more than half a dozen of the twenty-six died of starvation. When I took out all the combs I found heavy ones in many places at the back of the hives. The honey was in one part of the hive and the bees in another.

If the house apiary was not good for bees it was a most beautiful invention for moths, for, as there was no freezing inside the house, the eggs of the moths were not killed. In June I found minute worms starting webs in my best worker combs. From the previous experience I had had, I thought that in forty-eight hours more they would have damaged the combs at least to the extent of $50.00. In a couple of hours I had carried the three hundred combs to the bee-house, put a roll of sulphur into a kettle of coals, and before noon web-building had come to a standstill, and the architects, much to my satisfaction, were in the cold embrace of death. It was a pity that their zeal could not have been turned in some useful direction.

In July, 1876, the house apiary was working beautifully as it had the year before, and during the very hot weather I found it quite a convenience to be able to keep the room cool by opening the large trap door in the center of the floor, allowing the air to mingle with that of the cellar. The building seemed very well adapted to comb honey particularly, and the facility with which I could pile up sections and boxes without any solicitude in the matter of the covers blowing off, etc., was really quite an item. I had colonies that could be prevented from clustering out only by three sets of section boxes. More honey was stored because the supers were so well protected.

The house apiary was not a success for extracting. The great trouble was the propensity bees have to crawl all over the walls and even over the ceiling of the building when disturbed. If each hive could have stood away from the wall, and perhaps four or five feet from any other hive, it might have answered; but even then the labor of sweeping the room and keeping things clean would more than balance any advantages. In the open air Dame Nature does all the dusting, washes off the hives, dispenses sunshine unsparingly, and furnishes shade if the beekeeper only plants the grapevines.

Chaff Cushions in the House Apiary

In September, 1876, I purchased 140 bushels of chaff at 5 cents a bushel, and ran a part of it through a fanning mill at an expense of 2 cents a bushel more.

On the 18th of September I had the house apiary supplied with chaff cushions, and I rejoiced to find it answered the purpose so well. The cushions were made of two pieces of Indian Head muslin, 17 x 21, joined by a band 6 inches wide, thus making a "box" of cloth. I preferred to use the band as it left the ends and sides square, making a close fit to the sides of the hive, or to each other when placed in the house apiary. These cushions were all put on in a very few minutes and any hive could be readily opened by simply raising the cushion that covered it. The temperature outside was down to 40 degrees the night they were put on, inside the house 60 degrees. A thermometer put under one of the cushions for a few minutes showed 80 degrees. All this animal heat had been passing off continually through the one thickness of cloth prior to that time, and in the spring of 1876 during all the spring dwindling I fear that had been the trouble. Before putting on the cushions I could hear a pretty strong humming during cool nights, but afterward I could not even hear a murmur.

On December 15, 1876, with the heavy colonies I had in the house apiary I found the walls and ceilings not only damp, but at times literally dripping with water. In fact, they were just as my outdoor hives would be with a cap fitting perfectly tight. Of course, there was no other way but to cut a hole through the ceiling, and after making one a foot square I found quite a different state of things. However, while the room was so damp and wet I found the chaff cushions and the bees under them in as nice condition as any one could wish. Of course, the hole reduced the temperature of the inside of the room, but since the bees were well packed in

chaff it did not matter. The room was much warmer than outdoors.

In March, 1877, three colonies died in the house apiary and two outside, all of them because the cluster was at one side of the hive and the honey at the other. I had just 100 colonies left.

The use of my house apiary was finally abandoned entirely. This was the case, I believe, with most house apiaries throughout the land. The reason is, probably, that no one wants to work with bees in a building in hot weather, and in cold weather no work is needed.

Development of the Bee-Smoker

My first smoker was tobacco rolled up in a rag, and I blew the vile stuff in the bees' faces and eyes under all circumstances and conditions and at all times, whether they were cross or not, and many times when they stood in the door of their own hives without any feeling of ill will or evil designs toward anyone. But smoking them was a part of the program and smoked they had to be, so I thought, and I really pity them now when I look back and think of it.

After a while I left out the tobacco and tried the rags alone, which worked very well. Pretty soon Mrs. Root got out of rags, since I had burned so many, and it was a bother to be fussing so much, rolling them up; so I felt very grateful to Dr. C. C. Miller, when he paid me a visit and demonstrated that rotten wood is not only as good, but even better. After that I had my chunk of rotten wood and went on my way rejoicing until I burned up a hive of fine Italians by a spark in the sawdust.

I then read up on the subject in some of the back volumes of the American Bee Journal and finally made a tin smoker with a wire cloth and a mouthpiece to blow through. This worked beautifully, to be sure; but who could watch it to see that it did not go out while I was intent on the interior of a hive? It had to be tinkered with so much, and I got so out of patience at being obliged to fuss so long just to open a beehive, that I finally discarded it.

Now, it was Gallup, I think, who said that a pan of chips was just as good as anything, for it could be set to one side and would burn nearly half a day, and if one found it wasn't needed, why all the better; but it would always be ready if needed. I had never liked great, clumsy implements, so I got a nice little tin basin and it worked beautifully until the pesky thing got hot and burned my fingers when I picked it up excitedly. If I remember rightly I set it down again and made some remarks, I can't remember now just what I said, but I think it was not something about the weather

Soon after this I saw Mrs. Root using a very small enameled saucepan and I instantly asked if the handle ever got hot. She replied, "Certainly not. See how thin and light it is." As she persistently declined listening to any proposal to trade it for my tin basin I bought a brand new one for 40 cents at the tin shop, put in coals of fire and some rotten wood, and from that day on I had no trouble. The fire would keep an hour or two and anything would burn that was dry. For a brisk smoke in a hurry I sprinkled on a little sawdust because it was always handy; and if the pan was placed at the windward side of the open hive, the cloud of smoke that rose was all that was needed.

I had a square tin box large enough to set the saucepan in to keep it out of the rain, and also large enough to hold the fuel when I wanted the smoker put out. I had heard of Quinby's smoker having a bellows. I could not imagine how a bellows would add to its efficiency, when I took into consideration that it was often allowed to smoke for hours without being required at all. On actual trial, however, I found that Quinby's new smoker had many qualities that I had not given it credit for. It was very light, very neat, and perhaps the most ingenious part of it was that, if stood on end, it would burn for an hour or so if needed, but if laid on its side would go out at once. It would also drive bees anywhere I wished with such ease and speed and with such an extremely small amount of smoke that it was an agreeable surprise on first using it.

In 1877 I made my first bellows smoker, taking the idea from another beekeeper, who used a teakettle affair, in which a fire of rotten wood smoldered. The kettle part, however, was small, made of tin, and covered with an inverted funnel to direct the smoke. To prevent it from being overturned I made the base large like an oil can. It was, in fact, something like the Irishman's fence, four feet high and six feet thick, so that if it ever fell over it would be higher than before. The bellows underneath was simply a strip of strong leather tacked to the edges of two square boards. In order to have nothing to get out of order I dispensed with valves entirely and simply cut a hole in the bottom of the "kettle" to match a similar one in the upper board of the bellows.

By removing the upper part I could kindle the fire with coals or with matches and sticks as easily as in a fireplace, and when the chimney was in place it would burn anything from chips and rags to sound wood. After being once filled it would burn several hours.

THE OLD FOREMAN AT REST

THIS month, for the first time in 53 years, the readers of Gleanings in Bee Culture will read its pages as "made up" for press by other hands than those of its first printer and half-centenarian foreman, B. F. Hobart. On December 16, after he had nearly completed the "make-up" of the January number of this journal, he left the printing office at evening feeling indisposed. On the morning of December 19, loved ones found the old foreman asleep in his bed in "that dreamless sleep that kisses down his eyelids still," his tired hands peacefully folded across his breast, the far journey begun without a struggle or a pain.

B. F. Hobart at his work in The A. I. Root Company's printing office.

Byron F. Hobart was born Dec. 15, 1852, at Medina, Ohio, in the same house in which he lived his entire life, from cradle to grave—as boy and youth, as husband, father and grandfather. His parentage was of the best American pioneer stock. His boyhood and youth were those of the average American boy in a small mid-west village in the '50's and '60's, but embraced a good common school education. When about 20 years of age he became an employee of the late A. I. Root in his wholesale jewelry manufacturing at Medina. He was present at, and the last survivor of, that memorable occasion in American beekeeping history when a swarm of bees chanced to fly over Mr. Root's place of business, attracted his attention and was captured at his keen solicitation by offering a dollar as a reward for the capture.

Mr. Hobart and Mr. Root never parted company either as friends or as employee and employer from that early date, and when Gleanings in Bee Culture was started in 1872 Mr. Hobart was the first one to be placed in full mechanical charge, and at that post he remained for 53 full years. The oldest Gleanings reader, who may have read even the first numbers of the year 1872, read from the printing of the type that Mr. Hobart's hands placed in the form.

Much might be said of the unfaltering faithfulness and loyalty of this old friend and fellow laborer in the publishing field. He was the last but one of the pioneers in A. I. Root's publishing activities, and, as the years advanced, there grew up in Mr. Root's heart a peculiar tenderness for "Barney," as he called his old printer foreman. To Mr. Root he was "one of his boys" who began with him and continued with him through many strenuous days and years.

Mr. Hobart's work in the publishing department of The A. I. Root Company was never a mere "job" and never a task. It was full-hearted, willing service in a cause, and he was contented only when engaged in it. To the very last, with his physical powers giving way under the strain of the long years, his tired hands still grasped the "printer's stick" and "made up the forms" of our journal.

There is no better title to high consideration than a record of duty well done, as this man's duty was done. There is no higher class in America than the class of the intelligent, conscientious, faithful craftsman, such as was this man. That is still the best of America. And this old friend of ours crowned this high craftsmanship of his with a beautiful home life—simple, clean, fine, loving—in a typically good American home, supported by honest labor and bound together by the bonds of a common love.

Let's hope "Barney" and "A. I." have met again.

H. G. Rowe, Managing Editor.

Classified Advertisements

Notices will be inserted in the classified columns for 7c per word. You must say you want your advertisement in the classified columns, or we will not be responsible for errors. For special conditions on bee and queen advertising please write us. Copy should be received by 15th of preceding month to insure insertion. Cash with copy if credit has not been established previously.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

J. C. Abbott, W. B. Crane, H. B. Gable, Lewis Klaty, F. W. Lesser, Geo. Morrison, O. H. Schmidt, Penn G. Snyder, I. J. Stringham, Irvin R. Van Devier, H. J. Walters, Edw. A. Winkler, John Witnauer, A. G. Woodman Company.

HONEY AND WAX FOR SALE

FINE clover extracted honey. Sample, 20c. Appeldoorn, Hamler, Ohio.

MILD buckwheat extracted honey by the case or ton. J. J. Lewis, Lyons, N. Y.

EXTRACTED honey for sale, clover, buckwheat and amber. C. N. Ballard, Valois, N. Y.

FOR SALE—No. 1 white clover extracted honey in 60-lb. cans. F. E. Matzke, Juda, Wis.

NEW crop white clover honey in 60-lb. tin cans. Write for prices. D. R. Townsend, Northstar, Mich.

HONEY for sale, any kind, any quantity. The John G. Paton Co., 217 Broadway, New York City.

EXTRA fine No. 1 clover honey in new 60-lb. cans. Sample, 15c. Edw. Hassinger, Jr., Greenville, Wis.

NEW crop white clover honey in 60-lb. cans. Prices on request. Sundberg Bros., Route 3, Fergus Falls, Minn.

EXTRACTED HONEY FOR SALE—Clover, buckwheat, any kind of package. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Comb and extracted white clover honey. Prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—Sweet clover honey nearly water white and granulated, fine like fondant A. S. Tedman, Weston, Mich.

FOR SALE—Extracted, comb and chunk honey. Prices on request. Sample 15c. F. W. Summerfield, Waterville, Ohio.

WILD raspberry and milkweed honey in 5 and 10 lb. pails and 60-lb. tins. Write for prices. Hubbard Bros., Boyne Falls, Mich.

FOR SALE—New crop clover honey, finest quality, put up in 60-lb. cans, also 5-lb. pails. Write for prices. W. M. Peacock, Mapleton, Iowa.

FOR SALE—Choice white and light amber Michigan extracted honey in NEW 60-lb. cans, case or carload. Sample, 15c. David Running, Filion, Mich.

FOR SALE—White clover comb, also extracted. Send 15c for sample, saying how much you can use and will quote attractive price. Chris Holm, Genoa, Ill.

FOR SALE—Fine extracted clover honey in 60-lb. cans. Thoroughly ripened; also light amber. Price on request. Leland Farnsworth, Davison, Mich.

CLOVER and basswood honey blended by the bees. Color white, body fine. Prices upon request. State amount wanted. W. A. Jenkins, Rock Port, Mo.

GOLDENROD and buckwheat comb honey in 4¼ beeway sections for sale at reasonable prices. Quality very good. H. E. Crowther, Jefferson, Ohio.

HONEY FOR SALE in 60-lb. tins. Clover, crystallized, at 13c per pound; clover, liquid, at 14c per pound. Hoffman & Hauck, Inc., Ozone Park, N. Y.

FOR SALE—60 cases buckwheat honey, 2 60-lb. cans in each case, 9c per pound, by the case. Larger lots better prices. Robert Conn, Roaring Branch, Pa.

NEW crop fine quality clover honey, $13.75 per case of 120 lbs., 2 cans to case. Let us supply you early. W. D. Achord & Son, 320 Howard St., Findlay, Ohio.

FOR SALE—No. 1 white comb honey, $5.00 per case of 24 sections; No. 2, $4.00 per case; dark comb, dollar less; dark extracted, 9c lb. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Clover honey in 160-lb. kegs; buckwheat in 160-lb. kegs, clover and buckwheat blend in 60-lb. tin cans. Write for prices. Geo. M. Sowarby, Cato, N. Y.

FOR SALE—Fine quality light extracted honey in 60-lb. cans, 2 cans per case. State how much you can use and I will quote price. L. S. Griggs, 711 Avon St., Flint, Mich.

E. D. TOWNSEND & SONS, Northstar, Michigan, the largest extracted-honey producers in the central west. We wholesale our entire crop in 60-lb. cans. Your patronage solicited.

FOR SALE—Delicious amber honey, buckwheat and clover mixed. Put up in 60-lb. cans, $5.00 per can; $9.60 per case of two, f. o. b. Ransomville. Adams & Myers, Ransomville, N. Y.

FOR SALE—160 cases fancy comb honey at $5.00; 55 cases No. 1 comb honey at $4.50; 30 cases No. 2 Golden at $3.50. All in glass display cases. Eight cases to the crate. Harry M. Sulzberger, Ransom, Ill.

FOR SALE—Several very choice lots comb honey at $4.50 to $5.25 per case. Also fine lots sweet clover, white clover, buckwheat, and light amber extracted in 60-lb. cans. Beekeepers who need more honey for their trade and solicitors should write us. A. I. Root Co. of Chicago, 230 W. Huron St., Chicago, Ill.

OUR HONEY BULLETIN sent on request. Quotes you advantageous prices on large and small lots. Shipments from our stock here or direct from the producer. White clover honey of heavy body, packed in 60's. Also some autumn. Send us a card today. The A. I. Root Co. of Iowa, Council Bluffs, Iowa.

HONEY FOR SALE—For the beekeepers whose supply may be short this season. We have the choicest extra quality sweet clover, fine white clover, alfalfa, and some mesquite that we can offer our friend honey-sellers who may be short. Also comb, all grades. Write for prices. The A. I. Root Co., Medina, Ohio.

RASPBERRY HONEY was left with the bees until thoroughly ripened; is thick, rich, and delicious; unexcelled for table use. In new 60-lb. cans, $8 a can; 10-lb. cans by mail, postpaid, $2.50 each. We have some amber colored fall honey with a thick heavy body, the richest, sweetest honey we ever tasted, in 60-lb. cans for 10c a lb. A sample of either kind, 15c. Elmer Hutchinson & Son, Lake City, Mich.

HONEY—120 lbs. to case. Chas. E. Schneider, Irvington, Nebr.

WHITE clover honey in 60-lb. cans, first-class in every respect. J. F. Moore, Tiffin, Ohio.

FANCY buckwheat comb honey for sale. Noel J. Loucks, Sunnyside Apiaries, Springboro, Pa.

FIREWEED-RASPBERRY HONEY. In new 60-lb. cans. Write for prices. L. C. House, Stambaugh, Mich.

WHITE clover honey slightly blended with fall flowers. Two 60-lb. tins, $12.00. J. G. Burtis, Marietta, N. Y.

FOR SALE—Buckwheat extracted, 2 60-lb. cans to case, $9.85. Address Roscoe F. Wixson, Sales Dept., Dundee, New York.

FOR SALE—Buckwheat mixed honey in 60-lb. cans. Also white comb and mixed comb honey. G. M. Brewer, Medina, N. Y.

FOR SALE—Choice white and light amber extracted honey in new 60-lb. cans. Prices and sample on request. Kenneth Connors, Filion, Mich.

WHITE clover honey, new, 60-lb. cans, one to three cases, 11½c; 3 cases or more, 11c per lb. Sample, 20c. Hoehn & Honigford, Ottoville, Ohio.

NORTHERN Michigan fancy honey in 5-lb. pails, raspberry blend, $7.80 per doz., and amber, $7.20. Sample, 20c. Lewis A. McIntire, Boyne City, Mich.

FOR QUICK SALE, a limited amount of the best quality of white clover honey I have ever produced. Sample, 20c. L. A. Davis, Box 144, Grover Hill, Ohio.

FOR SALE—Buckwheat extracted honey in 60-lb. cans. A few cans extracted honey for baking purposes. 75 cases comb mixed clover and fall flowers. Bee-Dell Apiaries, Earlville, N. Y.

FOR SALE—Amber honey in 60-pound tins two to the case, 8c a pound. Water-white clover honey, finest in the world, 11c a pound. Prices f. o. b. Montgomery. M. C. Berry & Co., Box 697, Montgomery, Ala.

HONEY FOR SALE—Fancy white comb, $5.00; No. 1, $4.50; choice, $4.00; mixed, $3.50; buckwheat, $3.50; white extracted, 11c; buckwheat extracted, 8½c. Buckwheat comb in Root cartons, 25c extra. C. B. Howard, Geneva, N. Y.

HONEY AND WAX WANTED

WANTED—Amber extracted and comb honey. W. I. Boggs, DeSoto, Mo.

WANTED—Comb and extracted. J. E. Harris, Box 178, Morristown, Tenn.

WANTED—White clover comb honey. Glass-front case preferred. E. W. Peirce, 345 Cliffwood Ave., Zanesville, Ohio.

BEESWAX WANTED — Highest market prices paid. Cash or in exchange for supplies. Write us for quotation before shipping elsewhere. The A. I. Root Co., Medina, Ohio.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

BEESWAX WANTED—We are now paying very high prices for beeswax, both cash and trade. Write us for quotations and we will be very glad to quote you f. o. b. Hamilton or f. o. b. your shipping point. Dadant & Sons, Hamilton, Ill.

WANTED—A car or less quantity of clover honey in 60-lb. cans. Mail sample and quote lowest cash price for same; also send for my cut price circular on cans and pails for honey containers. A. W. Smith, Birmingham, Mich.

FOR SALE

FOR SALE—165 standard 10-frame hives. $1.00 each. L. F. Howden, Fillmore, N. Y.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE OR TRADE for bees, Mammoth incubator, nearly new. Ezra Ross, Morris, Ill.

BEGINNERS write me for miscellaneous list of used beeware. No disease. Glenwood Beard, Prospect, Ohio.

MAKE queen introduction SURE. ONE SAFIN cage by mail, 25c; five for $1.00. Allen Latham, Norwichtown, Conn.

FOR SALE—Extracting and comb honey supers and numerous other supplies. H. Shaffer, 2860 Harrison Ave., Cincinnati, Ohio.

LETTERHEAD SPECIAL—Write for our February Get-Acquainted-Offer Letterheads and Envelopes. Appeldoorn, Hamler, Ohio.

LATEST HONEY LABEL catalog and sample magazine FREE. Send today. Liberty Company, Station D, Box 4194, Cleveland, Ohio.

ROBINSON'S comb foundation will please the bees, and the price will please the beekeeper. Wax worked at lowest rates. E. S. Robinson, Mayville, N. Y.

SELLING 10-frame bodies, frames new, $1.00; 8-frame supers, used, 60c; foundation mill, $55.00. Complete line supplies. Hickory Shade Apiaries, Otterville, Mo.

FOR SALE—Good second-hand 60-lb. cans, two cans to a case boxed. We have large stocks of these on hand. Please write for prices if interested. We are offering only good cans and good cases. C. H. W. Weber & Co., Cincinnati, Ohio.

BEES AND QUEENS

WHOLE colonies of bees, if advertised for sale in these columns, must either be guaranteed free from disease, or, if not so guaranteed, the exact condition of the bees and the conditions of sale must be clearly stated in the advertisement; or, it will be satisfactory if the advertiser will agree to furnish a certificate of health from some authorized bee inspector at time of sale.

SEE our large ad on page 118 of this issue. W. C. Smith & Co., Calhoun, Ala.

QUEEN BEES in season, $1.00 each. Graydon Bros., Rt. 4, Greenville, Ala.

UNTESTED Italian queens, $1.00 each. Autauga Apiaries, Autaugaville, Ala.

PACKAGE bees, three-banded Italians. Caney Valley Apiaries, Bay City, Texas.

PACKAGE BEES, pure Italian stock. Write for prices. The Crowville Apiaries, J. J. Scott, Prop., Crowville, La.

THREE-BAND Italian bees and queens. See ad on page 131. J. M. Cutts & Son, R. F. D. No. 1, Montgomery, Ala.

WHEN IT'S GOLDEN, IT'S PHELPS. C. W. Phelps & Son, Binghamton, N. Y. See our advertisement on page 126.

HAVE you tried the famous Carolina queens? If not, write for circular. Caroina Bee Co., W. O. Curtis, Mgr., Graham, N. C.

GET STUNG with Howell's queens in 1926. They get results, now booking orders. Ready April 1. D. W. Howell, Shellman, Ga.

NEARLY all young bees in our packages, and at no higher prices. Let me tell you more about them. R. V. Stearns, Brady, Texas.

LEATHER-COLORED Italian queens, $2.00 until June 1; after, $1.00; tested, $2.00. A. W. Yates, 15 Chapman St., Hartford, Conn.

GOLDEN Italian queens, 1, $1.00; 6, $5.00; 12, $10.00; $75.00 per 100. Write for price on package bees. T. J. Talley, R. F. D. No. 3, Greenville, Ala.

IMPORTED three-banded Italian queens, the kind that gets the honey. Safe arrival and satisfaction guaranteed. Write for prices. G E. Whittle, Mussel, Ala.

91 COLONIES Italian bees, abundance of stores, packed in telescope winter cases, certificate of health and full equipment. Robert G. Moon, Cottam, Ont., Canada.

GOLDEN ITALIAN queens, producing large beautiful bees, solid yellow to tip. Package bees, nuclei circular, 1926 ready free. Dr. White Bee Co., Sandia, Texas.

FOR SALE—1 to 100 colonies of bees guaranteed free from disease, in 10-frame L. hives, painted. Wired combs. May 30 delivery. Woodward Apiaries, Clarksville, N. Y.

EARLY package bees, select three-banded Italian queens. Most northern breeder in California. It's an exclusive business with me, not a sideline. J. E. Wing, Cottonwood, Calif.

QUALITY QUEENS—Now booking orders for 1926. Also a few package bees. Write for literature and prices. Valley Bee & Honey Co., Weslaco, Texas. (E. E. Salge & Bros., Props.)

BRIGHT three-band Italian queens with special introducing cages. Let's introduce 'em right this year. Write for circular and price list. J. F. Diemer, R. F. D. No. 3, Liberty, Mo.

IN my catalog I tell how I cage the bees for my packages so that most of the old bees fly back to the hive, leaving young bees in cages, and at no higher prices. R. V. Stearns, Brady, Texas.

The SHAW line-bred Italian queens. The same old stock, the same old breeders at the same old price, $1.00 each. If better queens could be bred we would breed them. Shaw & Ramsey, Loreauville, La.

GOLDEN ITALIAN queens for sale, 1, $1.00; 6, $5.00; 12, $10.00; 100, $75.00. Package bees in season, 20 per cent to book your order for spring delivery. J. F. Rogers, Greenville, R. F. D. No. 3, Ala.

LATHAM'S "She-suits-me" untested 3-banders, $2.00 per queen from May 15 to June 5. After June 5, $1.00 each. Packages and nuclei. Introduction insured. Send for circular. Allen Latham, Norwichtown, Conn.

GOLDEN Italian Queens and nuclei for 1926 (the kind that gets the honey). Price, untested, $1.00 each; 6, $5.00; 12, $10.00; $75 per 100. 2-frame nuclei with queen, $4.50 each. Safe arrival guaranteed. E. F. Day, Honoraville, Ala.

BOOKING orders for high-grade three-banded Itaian bees and queens. 2-lb. pkg., $4.50. discount on quantity. Select untested queen, $1.00; $10.00 per dozen; select tested queen, $1.50. Inspector's crtificate with each. J. Allen, Catherine, Ala.

THREE-banded Italian queens. Package bees. Untested queens, 1, $1.00; 6, $5.00; 12, $9.50; 100, $75.00. Tested queens, $1.50 each. Write for price list on package bees. Safe arrival, satisfaction guaranteed. Taylor Apiaries Lock Box, Luverne, Ala.

QUEENS—When you need a good queen you may be sure you will get one of Laws' best by return mail. Can furnish every month in the year. Better requeen those colonies that have paid you least, and do it this fall. Price $1.00 each. W. H. Laws, Box 505, Wharton, Texas.

COMBLESS package bees shipped on sugar syrup with queen. Pure Italian stock. 2-lb. pkg., 1 to 10, $4.25; 3-lb. pkg., 1 to 10, $5.25. Write for prices on larger lots or nuclei. No disease and safe arrival guaranteed. Reference furnished. 20 per cent books order. John A. Williams, Box 178, Oakdale, La.

BEWARE OF DISEASES. Save about 50c per package on transportation. Iron-clad guarantee on safe arrival and satisfaction. Fine pure Italians, large pure queens. Very low prices on one to several thousand packages. Write at once for special prices. The Louisiana Modern Apiaries, Bunkie, La.

I BUY and sell many hundred packages of bees of different sizes, both combless, pound packages shipped on a comb of sealed brood and honey, also nuclei. If you are in the market for package bees or nuclei, or have package bees or nuclei for sale, correspond with E. D. Townsend, Loreauville, La., "Where the good queens come from."

BEES, BEES, BEES. I have the bees and equipment, backed by 15 years of beekeeping experience and selective breeding to supply your wants with 3-banded Italians. Begin shipping April 10. Two-pound packages with queen, $4.00 each; 6, $3.75 each; 12 or more, $3.50 each. Select untested queen, $1.00 each; 12, $10.00. P. M. Williams, Ft. Deposit, Ala.

SUPERIOR three-banded Italians, bred for honey, prolific, vigorous and hardy. Two-pound package with queen, $4.50; 5 2-lb. packages, $21.25. 25 per cent with order. Balance before shipment. Book your orders early to avoid delay. A trial order will convince you. Satisfaction guaranteed. Write for price on larger quantities. The Shoffner Apiaries, Liberty, N. C.

GOLDEN QUEENS AND BEES—Queens that are bred for business. A 1-lb. package with queen, $3.00; a 2-lb. package with queen, $5.00; a 3-lb. package with queen, $7.00. Selected untested, $1.00; tested queen, $2.50. Deposit your order now so that you can get your queens and packages when you want them. Only one-fourth cash down. E. A. Simmons, Greenville, Ala.

ITALIAN bees and queens—Honey Girl strain, 3 lbs. bees with queen, $4.25 per pkg.; 10 to 24 pkgs., $4.10 each; 25 or more, $4.00 each; 4 lbs. bees with queen, $5.25 per pkg.; 10 to 24 pkgs., $5.10 each; 25 or more, $5.00 each. Guarantee safe arrival subject to bad order receipt. Certificate of inspection with each shipment. Highest quality. Prompt service. Mayeux Bee Co., Hamburg, La.

TRY "Dalton's Introduced-Laying-En-route to-You" Queens with packages. 2 Hoffman frames brood, bees, and honey; two additional pounds bees shaken in. Queen introduced and laying as she travels. All Italians. Best and biggest package in south, 20 per cent books for May delivery. Send for December Association publication, giving Louisiana certified advertising of bees and packages. Jes Dalton, Bordelonville, La.

BRIGHT AMERICAN BEAUTY ITALIAN QUEENS AND BEES. April delivery, 2-lb. combless with untested queen, sugar syrup feed, $4.00 each; 5 or more, $3.85. SPECIAL 2-lb. bees, frame emerging brood, queen introduced and laying, $4.75; 5 or more, $4.65. Queens, $1.25 each. Write for quantity prices on bees and queens. State health certificate. Satisfaction and safe arrival guaranteed. Tupelo Apiaries, Apalachicola, Fla., J. L. Morgan, Prop.

BARGAINS in bees for spring delivery. Finest Golden Italian queens, hybrid workers. Astonishing saving in price. Get my square deal offer by mail. Iron-clad guarantee. Spencer Bee Farms, 2436 Fern St., New Orleans, La.

THE following have been bonded as breeders of queens and package bees until January 1, 1927: J. F. Diemer, Liberty, Mo.; C. B. Bankston, Buffalo, Texas; T. W. Burleson, Waxahachie, Texas; Emil W. Gutekunst, Colden, N. Y.; J. G. Puett & Sons, Moultrie, Ga.; J. J. Scott, Crowville, La.; Jasper Knight, Hayneville, Ala. Surety Department of the American Honey Producers' League, Colin P. Campbell, Attorney-in-Fact, Grand Rapids, Mich.

BEES FOR SALE—Packages and nuclei. With or without queens. 3-banded Italians only. If no queens are wanted deduct $1.00. One pound bees with a good selected untested queen on a frame of brood and honey, $3.25. Same price for a two-frame nucleus with queen. For additional frame brood and honey or pound bees, add 75c. All bees shipped with a government health certificate and I guarantee safe arrival. I ship on date agreed. L. C. Mayeux, Hamburg, La.

BEES AND QUEENS—I have a limited amount of hybrid bees, not fully Italianized. I am going to offer for spring delivery at the following bargain prices: 2-lb. package, $3.75; 10 or more, $3.50 each; 3-lb. package, $4.25; 10 or more, $4.00 each. Young untested Italian queen included with each package at the above named prices. This is a real saving to the purchaser, for in a few weeks the colony will Italianize. Ten per cent books your order. Prompt and safe delivery guaranteed. Never had a case of foul brood in my apiaries. Would urge my old customers to place orders early. H. E. Graham, Cameron, Box 666, Tex.

We have 18 trains daily from Macon. Fast trains to all principal points enable our bees to reach you fresh and ready for work. We use no candy in shipping cages. Our bees are inspected regularly. All necessary papers accompany each shipment to insure prompt delivery. We are going to much expense to rear the very best queens from the best of Italian stock to ship caged right among the bees. Remember your profits depend upon the QUALITY of the QUEEN. Shipping point, Bonaire, Ga. A. J. Heard, Wellston, Ga. References: Luther Williams Banking Co., Dunn or Bradstreet, Macon, Ga.

ATTENTION, NORTHERN HONEY PRODUCER—ST. ROMAIN QUALITY BEES ready for 1926 season. I am in position to furnish several carloads of nuclei and pound packages at a very reasonable price. Shipping season starts April 1, 1926, and all bees are absolutely free from disease. I furnish health certificate with each shipment, also guarantee safe arrival. All bees shipped on comb of emerging brood and honey for feed in transit, also combless packages, if customer desires. Prices as follows: 1 2-lb. pkg. with queen, $3.00; 1 3-lb. pkg. with queen, $4.00; 1 4-lb. pkg. with queen, $5.00. Large orders will be given special attention. Address John St. Romain, Marksville, La.

HELP WANTED

WANTED—Young man for season of 1926 for shop and bee work. Start early in season. Reference required. Fred D. Lamkin, Poplar Ridge, N. Y.

WANTED—Young man who wants to learn beekeeping for 1926. Will furnish board and room and pay small wages. Give reference and wage wanted in first letter. Work for the right man the year round. R. W. Ensley, Aberdeen, Idaho.

WANTED—An experienced student in an apiary. State salary expected. Jas. K. Orr, Fairview, Mont.

WANTED—Experienced beekeeper for season 1926. State age, weight, etc., in first letter. Reference required. Oscar Skow, Dunlap, Iowa.

WANTED—Young man to learn queen and package business. Good opportunity for the right man. Will exchange references. J. M. Cutts & Son, R. F. D. No. 1, Montgomery, Ala.

WANTED—Two industrious young men with good habits to work with bees and a little farm work the coming season. N. L. Stevens & Son, Venice Center, N. Y.

HELP WANTED—Country bred bee-man for May 1. State experience fully. Give references, age, and salary expected to Nov. 1. Woodward Apiaries, Clarksville, N. Y.

WANTED—Dependable young man of good habits to work with bees in outyards. Season of 1926. Board and lodging provided. State particulars. Archie Coggshall, Groton, R. F. D., N. Y.

WANTED—Honest young man as helper in bee yards, also a little farm work. Start April 1. Chance for advancement. State wages expected with board in first letter and amount of beekeeping experience. W. C. Long, Millville, Pa.

SITUATION WANTED

EXPERT on beekeeping, queen breeding, bee diseases, wants position. Dr. Zimmerman, 350 Hanover St., Portsmouth, N. H.

MISCELLANEOUS

THE BEE WORLD—The leading bee journal in Britain and the only international bee-review in existence. It is read, re-read, and treasured. Will it not appeal to you? Specimen copy free from the publishers. Send us a postcard today. It is well worth your little trouble. The Apis Club, Benson, Oxon, England.

Package Bees and Queens

Transportation Prepaid

After thirty years of select breeding our Italian strain of three-banded bees, we have one that is unparalleled or unsurpassed for disease-resisting qualities and honey production. Among the breeding queens we have for 1926 is one from Manitoba, Can. This queen, "Mrs. Manitoba Wright," has an authentic record of 646½ pounds surplus honey and one increase from spring count for 1925; 25 pounds one day. All queens reared by us are from mothers having wonderful records. Write for 1926 circular and price list. Booking orders now. Orders placed with us now will be shipped promptly. Safe arrival and satisfaction guaranteed.

M. C. Berry & Co.

BOX 697. MONTGOMERY, ALA., U. S. A.

Bee Wise!

USE HA STANDARD

HONEY JARS

Your Sales for 1926 Will Increase by the Adoption of

HAZEL-ATLAS

Honey Jars

IDEAL PROPORTIONS

"They Simply Cannot be Improved Upon"

DISTRIBUTORS:

The A. I. Root Company, Medina, Ohio.

Hoffman & Hauck, Ozone Park, N. Y.

A. G. Woodman Co., Grand Rapids, Mich.

The A. I. Root Company of Iowa, Council Bluffs, Iowa.

A. I. Root Co. of St. Paul, St. Paul, Minn.

A. I. Root Co. of Syracuse, Syracuse, N. Y.

Hazel-Atlas Glass Company

Wheeling, W. Va.

TOO LATE FOR CLASSIFICATION.

WILL trade package bees for white honey, or what? Van's Honey Farms, Hebron, Ind.

HONEY for sale. Buckwheat extracted, 120-lb. case, $12.00; 12 5-lb. pails, $7.20. Paul D. Thompson, Linesville, Pa.

WANTED—Bees and equipment for spring delivery in Wisconsin, Michigan, Minnesota or northern Illinois. B. E. Glick, Carbondale, Ill.

BEES and QUEENS—Bargain in 1 to 100 colonies of bees guaranteed free from disease, in 10-frame hives, complete with supers and excluders. J. B. Pace, Allensville, Ky.

BEEKEEPERS—Send for our special reduced prices on Standard hive bodies, supers, and frames. Catalog and price list free. Schmidt Bee Supply Co., 1420-22 Hagar Ave., St. Paul, Minn.

Hulled, Scarified White Blossom Sweet Clover Seed

ANNUAL AND BIENNIAL MIXED

5 and 10 pound bags by parcel post prepaid .....25c a pound

25 to 50 pounds by express prepaid .....20c a pound

100 pounds or more express collect, 15c a pound

Seed is ready for prompt shipment.

M. C. Berry & Co.

Box 697, Montgomery, Alabama, U. S. A.

New Prices from Old Firm

Queens: Untested, 1 to 10, at $1.10 each; 11 to 25, $1.00 each; 25 to 50, 90c each; 51 to 100, 80c each; above 100, 75c each.

Package Bees: 2-lb. package with untested queen, $3.50 each; 25 or more, $3.00 each; 3-lb. package with untested queen, $4.50 each, 25 or more, $4.00 each.

Nuclei: Two and three frame nuclei, $4.50 and $5.50 each; 25 or more, 50c less. Our business is founded on a satisfactory guarantee basis. Our bees are from the good Miller strain. For further information write. All shipments F. O. B. Macon, Miss. Terms, 10 per cent to book, balance just prior to shipping.

Geo. A. Hummer & Son

Prairie Point, Miss.

Attention, Beekeepers!

The Florida Boom has resulted in higher prices for both labor and lumber in South Georgia, but I have decided not to raise my prices on bees and queens for the present. I quote the following prices for 1926 delivery:

1 2-lb. package with untested queen	$ 4.25
10 2-lb. packages with untested queen	37.50
25 2-lb. packages with untested queen	90.00
50 2-lb. packages with untested queen	175.00
100 2-lb. packages with untested queen	325.00
1 3-lb. package with untested queen	5.25
10 3-lb. packages with untested queen	45.00
25 3-lb. packages with untested queen	108.75
50 3-lb. packages with untested queen	212.50
100 3-lb. packages with untested queen	400.00

2 and 3 frame nuclei at same prices as packages. Tested queens, 50c extra.

I have been in the bee business for over 15 years and have the best stock of three-banded bees I have been able to purchase or breed. There has never been any disease in this section of the State and Georgia is now entirely free of foul brood. Certificate of State Inspector with each shipment. I guarantee safe delivery, and will replace or refund on receipt of bad order report signed by the express agent at point of delivery. I do not recommend shipment by parcel post.

I can make shipment at any time after April 10th and have around 700 colonies from which to draw. I will not overbook and suggest that you place your orders early.

I have been local representative for R. G. Dun & Co. for nearly 20 years and refer to any bank or banker in this section of the State.

N. L. Stapleton, Colquitt, Ga.

SOUR HONEY DEPT.

It's just winter and hard work and freezin or froze and snow and blowin and cash and nothin but cash for coal or freeze yourself and gloom onto me everywhere. My Christmas presents was a disappointment. One man sent a box of fish hooks most eat up with rust or the barbs broke off. Another sent a picture of little George Washinton and a cherry tree hacked into by a hatchet. Another sent a black fox picture. But nobody sent a ton of coal or a good coon dog guaranteed proof agin rabbit chasin. It's gettin to be a harder and harder world, specially with the skunks holed up tighter than bark on a beech tree and just cash for everythin Ab and me has to buy, and even the first black sucker fishin three months away and every mushrat hole on the creek drownded out permanent. Nothin but gloom I say and our wives aint comfortin Ab nor me much either and gave up obeyin us years ago all contrary to their solem promise to. The work in the lumber yard aint no snap either with John Gooer a Proossian for boss who don't know nothin but work and lumber and to go to church and Sundayschool on Sunday and yap about lovin one another and the very next day with the wind blowin great guns out of the northwest put me on the top northwest corner of a green lumber pile where other members of his Sundayschool class fix it up to knock me off as much as twenty feet by shovin up four or five green boards all to oncet together. But Sunday is six days away with them religioners allays.

* * *

Still there is brief moments in winter I can enjoy sometimes as when the cemetery aint the most invitin place I see. For instants Geo. Rea head of all beekeepin in Pennsylvany and Will Cary of

(Continued on page 118.)

Patents Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.

CHAS. J. WILLIAMSON, McLachlan Bldg., Washington, D.C.

CANDY FOR WINTER

When packing your bees be sure and give them some of this candy. Just what you need for colonies short of stores. Put up in convenient form, easily and quickly placed in hive. A trial will convince you. Send for circular and price.

H. H. JEPSON

237 Park St. Medford 55, Mass.

Nebraska and Western Iowa Beekeepers

We have a large stock of LEAHY'S STANDARD BEE SUPPLIES and we are prepared to make you prompt shipments from Omaha on receipt of your orders.

There is one satisfaction in buying LEAHY'S supplies: They are guaranteed to be first class in every respect or you may return them and your purchase price plus all transportation charges will be refunded.

Write for our 1926 catalog and ask about our discounts on early orders.

W. R. Perry Co.

1209 HOWARD ST., OMAHA, NEBR.

Our catalog prices are low.

MR. QUEEN BREEDER:

Should you need some good queen-mating hives, let's get together at once. Here is what we have to offer: 300 slightly used, nailed and painted double queen-mating hives with cypress bottom, metal roof covers, each hive divided into two equal compartments by a tight-fitting division-board, each compartment taking a half-width inner cover, the two hive entrances facing in opposite directions, the hives taking standard frames and easily convertible into regular ten-frame standard hives by removing division-boards.

These hives are the same as we use in our own queen-mating yards and the only reason we have them to offer is that we made up more than we can use to advantage at present.

Price $2.25 each, f. o. b. Medina.

The A. I. Root Co., West Side Sta., Medina, O.

LIVE BEES FOR SALE

J. V. ORMOND & SONS, ELBA, ARKANSAS offer for sale this season bees from the OZARKS of ARKANSAS. The bees will be just bees—blacks, hybrids, and Italians. You will get more bees per pound of blacks but of course they will not be as pleasant to handle.

The business preferred by us is honey producers in the North who want bees to build up their colonies, and want good measure.

Price per package of two pounds, F. O. B. ELBA, ARKANSAS. $4.00 without combs, either queen candy feed or 50-50 sugar-water syrup. 10 per cent binds the contract, balance when bees are shipped.

FULL WEIGHT AND SAFE ARRIVAL GUARANTEED. Should a package arrive in bad order, get a receipt from your Express Agent noting such condition and have the package returned to us, we paying express charges both ways. We WILL immediately return bees or money—your choice. Reference, THE AMERICAN EXCHANGE BANK, LESLIE, ARKANSAS.

J. V. ORMOND & SONS, ELBA, ARKANSAS.

Italians

PACKAGES—QUEENS—NUCLEI
VIGOROUS THREE-BANDED STOCK

We give you prompt shipment, young workers, young queens, and cheap transportation from most northern point in Texas.

COMBLESS PACKAGE, ANY SIZE

Nuclei on the very best combs. If you are in need of the above in lots of 50 or more better get my prices at once.

Baughn Stone
CLARKSVILLE, TEXAS.

Superior Italian Bees and Queens

Get our descriptive folder and delivered prices on package bees. Ten per cent cash with order. No disease, safe arrival and satisfaction guaranteed.

W. C. Smith & Company
CALHOUN, ALABAMA.

THE LIBERTY APIARY, C. A. Mayeux, Prop., Hamburg, Louisiana, can furnish you 2000 packages light three-banded bees with queens. Reference, Avoyalles Bank, Moreauville, La. We ship on comb only via express. Each package contains a selected untested queen and a government health certificate. 2 lbs., $3.25; 3 lbs., $4.25; 5 lbs., $5.25; 2 and 3 frame nuclei, same price as 2 and 3 lb. pkgs. 20 per cent down, balance at shipping time. Season opens April 15 to June 15. On orders 25 or more pkgs., deduct 25c a pkg. This is our twelfth successful year in the package business. All dead bees will be promptly replaced if bad order notation is furnished. A 5-lb. swarm with a select tested queen and two frames brood, $6.50.

Package Bees

Nuclei and queens, April, May and June delivery. Write for prices and guarantee. We can please you.

THE CROWVILLE APIARIES,
J. J. Scott, Prop. Crowville, La.

GOLDEN QUEENS AND THREE-BANDED BEES FOR 1926

Untested queens, $1.00 each. Tested, $1.50 each. 2-lb. package of bees, $3.00; 3-lb. package of bees, $4.50; nucleus, $1.50 per frame. Additional pound of bees with nucleus, $1.00. No disease; safe arrival guaranteed; bees inspected; never had disease.

J. W. SHERMAN, VALDOSTA, GEORGIA

SOUR HONEY DEPT.

(Continued from page 117.)

Virginny came snoopin around here one day not long ago just like Doc Phillips and Jim Hambleton and Sechrist and Eckert a tryin to get my secrets on winter-hunger resistant bees, and got in a most pleasin fight theirselves right afore me. It all started about bee eggs. They both was sort of sneerin and snickerin and nudgin each other as I got to talkin enthoosiastic about my new strain when Cary up and says: You will have a strain of bees to sometime as what will rear just one queen a year and one drone with extra strong wings onto him, no wastin time by the bees turnin worker eggs into queens and so no swarmin troubles. Like touchin off gun powder Prof. Rea was onto Cary's back all to oncet and says lofty: Don't you know yet Cary there aint no worker eggs never? Oh, there aint, aint there, says Cary, flarin up. Where does the workers come from? They come from queen eggs, says Prof.

(Continued on page 122.)

64 BREEDS Chickens, ducks, geese and turkeys. Pure-bred, high quality, hardy and most profitable. Fowls, eggs, incubators, brooders; lowest prices. *America's great plant.* At it 33 yrs. Fine new 100 page book and catalog free.
R.F.Neubert Co., Box 884, Mankato, Minn.

SAVE MONEY ON FRAMES AND FIXTURES FOR YOUR SUPERS

Hoffman self-spacing frames, per 100	$4.75
Unspaced frames, per 100	4.25
Shallow self-spacing frames, per 100	3.50
Section-holders for 4¼x1⅞ supers, per 100	3.25
Scalloped separators for above supers, per 100	1.45

E. GRESSMAN, HAMBURG, NEW YORK

PACKAGE BEES AND QUEENS

Pure Italian. Beautiful, gentle, and good honey-gatherers. State inspected. Your money's worth or your money back. April delivery. One 2-lb. combless pkg. with select untested queen. $4.00; ten, $38.00. One select untested queen, $1.00; doz., $10.00; hundred, $75.00. We have satisfied customers everywhere.

CRENSHAW COUNTY APIARIES,
Rutledge, Alabama.

Beeswax

WE PAY THE BEST MARKET PRICE

Write for prices and shipping instructions.

The A. I. Root Co.
Medina, Ohio

Beekeepers' Supplies for 1926

Begin the season right. Buy early and good quality of hives, sections, Three-ply foundation, etc. We carry Root's goods of high quality in stock that are mostly in demand by the average beekeeper. Can fill orders promptly. Beeswax wanted. Send for our free catalog.

J. Nebel & Son Supply Co.

Montgomery County. High Hill, Mo.

1926 Queens

We went into winter quarters with the finest lot of bees it has ever been our fortune to own, not a mismated queen in the yard, hives chock-full of honey from top to bottom. Our queen-rearing season starts in February. As we are QUEEN BREEDERS exclusively we can assure our friends and patrons the very best ITALIAN QUEENS that money can buy. The SHAW line-bred stock as of old. Season's queens, $1. Select tested, $2. Choice selected for breeding, $5.

Shaw & Ramsey

LOREAUVILLE, LOUISIANA.

CARNIOLANS

are very gentle, very prolific, build up rapidly during the spring months, and retain their strength during the entire working season. They winter better perhaps than other races of bees, coming through the winter bright, clean, and with vitality but little diminished, if well protected and supplied with good stores. They are most excellent workers. Our average last season was over 150 lbs. extracted per colony in our apiaries, and this in only a moderate locality.

Ask for our free paper, "MERITS OF THE CARNIOLAN BEE." Beekeepers particularly in the northern states would do well to carefully consider the good qualities of Carniolans in making their plans for the coming season.

I supply queens, a limited number of 2-lb. packages, and 8-fr. colonies in season.

ALBERT G. HANN, Glen Gardner, N. J.

Queens
Package Bees

Avoid the rush by ordering now and your shipping date will be reserved.

Write for my new 1926 descriptive list.

Hayneville Apiary Co.

W. E. Harrell, Prop.

Hayneville, Alabama

Many Years' Experience

buying and shipping package bees and nuclei enables me to book orders intelligently, so that I can ship on the dates desired. It has also taught me how to ship the right sized package or nucleus so that they will reach you in the best of condition. See ad elsewhere in this issue.

A. J. Heard

WELLSTON, GEORGIA.

Shipping Point, Bonaire, Ga.

Mr. Beekeeper

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. **We pay the highest cash and trade prices for beeswax. Write for free illustrated catalog today.**

Leahy Mfg. Co., 95 Sixth St., Higginsville, Mo.

J. W. Rouse, Mexico, Missouri; W. R. Perry Company, Omaha, Nebraska; Albert M. Hunt & Sons, Goldthwaite, Texas, Distributors.

It's very simple—

YOUR honey has a better chance in a decorated metal container.

Such packages as these Canco honey pails do a great deal to win permanent friends for your product. They look so well in the store. They are so easy to keep clean and bright. In both store and home they remain active advertisements for you as long as they exist.

This Canco honey pail is brilliantly decorated in red, green and gold. Made in 3 sizes—2½ lb. cans, 5 and 10 lb. pails.

Used one season, they make your selling much easier the next. Plan now for the coming season—write to one of these distributors for samples and prices, or direct to the nearest Canco office.

Colorado Honey Producers Association, Denver, Col.
Dadant & Sons, Hamilton, Ill.
G. B. Lewis Company, Watertown, Wis.

10 Tivoli Street, Albany, N. Y.
1304 Main Street, Lynchburg, Va.
23 W. 3rd Street, Sioux City, Iowa
318 E. Broad Street, Texarkana, Ark.

B. F. Smith, Jr., Fromberg, Mont.

American Can Company

NEW YORK CHICAGO SAN FRANCISCO HAMILTON, ONT. PORTLAND, ORE.

American Can

CONTAINERS OF TIN PLATE · BLACK IRON · GALVANIZED IRON · FIBRE

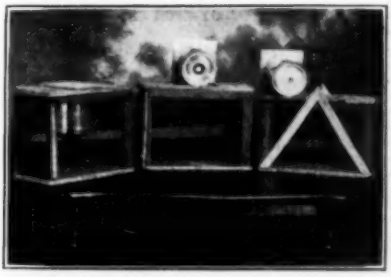
TRADE CANCO MARK

For years we have been shipping thousands of pounds of bees all over U. S. A. and Canada.

ITALIANS - GOLDENS - CARNIOLANS

BUY SUPERIOR MARKED QUEENS. We marked our Carniolan queens with a white dot on their backs in 1924, RED in 1925, and will mark them YELLOW in 1926, and again white in 1927, etc. Had some fine compliments on this method, for it enabled them to see the queen at a glance moving among the bees. It also keeps track of their ages. So we have decided to mark all queens, both Italians and Goldens, without extra cost to those wanting them marked. Wings clipped FREE upon request.

Mr. and Mrs. Ault and son grafting cells Dec. 26th, to fill an order from Root Co. of Chicago for 5 doz. virgins in alcohol.



Pat. No. 1388085. Pat. No. 1353137. Our superior feeders enable us to ship to Canada as safely as U. S. A.

BUY PACKAGE BEES to replace winter loss, make increase, or get started in beekeeping. SEND FOR FREE CIRCULARS.

We will have 1800 more colonies to ship from than we planned on, therefore can handle more orders. Booking now, 10 per cent down, balance just before shipping.

PACKAGE BEES

March to May 11 shipping

	Lots: 1 to 4.	5 to 24.
2-lb. pkg.	$4.00 each.	$3.50 each.
3-lb. pkg.	5.00 each.	4.50 each.

May 11th to December shipping.

2-lb. pkg.	3.00 each.	2.50 each.
3-lb. pkg.	4.00 each.	3.50 each.

NUCLEI

	Lots: 1 to 4.	5 to 50.
2-frame	$4.25 each.	$3.75 each.
3-frame	5.25 each.	4.75 each.

If you want 1 or 2 extra pounds of bees with nuclei, add $1.00 per pound. Add price of queen when ordering package bees or nuclei. Safe arrival GUARANTEED.

QUEENS

Bred in widely separated yards. Bees is six counties.

March, April, and May shipping.

	Lots: 1 to 9.	10 to 24.
Untested	$1.25 each.	$1.00 each.
Select Untested	1.50 each.	1.35 each.
Select Tested	3.00 each.	2.50 each.

June to December.

Untested	1.10 each.	.85 each.
Select Untested	1.35 each.	1.20 each.
Select Tested	2.85 each.	2.10 each.

Add 25c extra to these prices for Carniolan queens. **Write for prices on larger lots.**

If full remittance is sent with order, deduct 6 per cent for Feb. and 4 per cent for March.

A customer in North Dakota wrote Nov. 15th: "I purchased package bees from you and certainly had good luck. In first place, they arrived just when I ordered them and in the way I ordered. In spite of a backward season to start bees on nothing but foundation, I only had to feed two weeks until dandelion bloom, from then on they were absolutely no care at all except giving room. To show my confidence in your services I am enclosing check to cover another order for SPRING. (Some of those 2-lb. packages averaged 240 lbs.)"

Mr. Wm. I. Russell, Glen Cross, Ont., Canada, wrote Nov. 23rd: "The Carniolan bees I received from you in May did remarkably well. I did not have to feed them. They were far superior in every way to other packages I received about the same time (from other shippers)."

Ault Bee Company, Box 98, Weslaco, Texas

Not Only Cheap, But Good

Ask any wood expert how much longer CYPRESS will last than ordinary woods. Then you can see how cheap our Wood Eternal Goods really are.

Dovetailed Hive Bodies, complete, no frames, per 100	$60.00
Dovetailed Hive Bodies, complete with frames, per 100	100.00
Dovetailed Shallow Extracting Supers with frames, per 100	65.00
White pine Hoffman frames, per 1000	45.00

We can furnish you any amount of any kind of equipment that you might need, and can save you money on hives, supers, bottoms, covers, frames, and foundation. Send list of what you need and compare prices.

The Stover Apiaries, Tibbee Station, Miss.

Telegraph office and shipping point, MAYHEW, MISS.

Running's Bees and Queens

ITALIANS THAT ARE HONEY-GETTERS

We are now booking orders for 1926 delivery. Shipping begins April 1. We have been producing package bees in the South for six years and have one of the best package and queen-rearing establishments in the South, and have been producing large crops of honey in Michigan for 26 years.

WE HAVE THE STOCK AND KNOW THE BUSINESS

Try one or a hundred and you will want more. They get the honey. We want to show you. Bees and Queens shipped from Epes and Sumterville, Ala. Our prices are right, stock unexcelled and service guaranteed. Write for prices, stating how many you can use.

David Running

Filion, Mich.

AFTER JAN. 1, SUMTERVILLE, ALA.

DINGEE ROSES

On Own Roots

Pot-grown rose bushes, on own roots, for every one anywhere. Plant any time. Old favorites and new and rare sorts, the cream of the world's productions. "Dingee Roses" known as *the best* for 76 years. Safe delivery guaranteed anywhere in U. S. Write for a copy of

Our "New Guide to Rose Culture" for 1926. It's FREE.

Illustrates wonderful "Dingee Roses" in natural colors. It's more than a catalog —it's the lifetime experience of the *Oldest and Leading Rose Growers in America*. A practical work on rose and flower culture for the amateur. Offers 500 varieties Roses and other plants, bulbs and seeds and tells how to grow them. Edition Limited. *Established 1850. 70 Greenhouses.*

THE DINGEE & CONARD CO., Box 218 West Grove, Pa.

SOUR HONEY DEPT.

(Continued from page 118.)

Rea, changed afore three days after hatchin into worker larvy. You so far behind you don't know that? Oh, says Cary, praps you and Doc Phillips and Jim Hambleton make all the bee eggs and that's how you know so much about it?

By this time their ears was laid back agin the sides of their heads like two hostile tom cats and their claws quiverin. They was as peaceful as a Western N. Y. beekeepers' annual convention. And Prof. Rea says next: You aint scientific, so you aint. Is that so, says Cary. You high brow smart Aleck beekeepers as what got all you know from Doc Phillips has got what I call the Ithaca itch and not much else. Well, says Prof. Rea chokin up, if you know so much tell me how a worker egg can allays be made a queen egg and hatch a queen if it warn't a queen egg allays. Because, says Cary, they make a big cell and feed special and that's all there is to it, and now you tell me how a queen egg can allays be made a worker egg and hatch a worker if it warn't a worker egg allays. How do you know any way whether a queen egg backs up into a worker egg or a

(Continued to page 124.)

Bright Italian Bees

I guarantee prompt shipments and safe delivery. Health certificate furnished. Have had no disease during the fourteen years in this location.

1 2-lb. pkg. with untested queen, $4.00
10 2-lb. pkgs. with untested queen, 35.00
25 2-lb. pkgs. with untested queen, 80.00
Queens, each 1.00

Prices furnished on larger lots and on 3-lb. pkgs. 10 per cent with order.

M. Stevenson

WESTWAGO, LOUISIANA.

Write for Book Today

FARM WAGONS

High or low wheels—steel or wood—wide or narrow tires. Steel or wood wheels to fit any running gear. Other wagon parts. Write today for free catalog illustrated in colors.

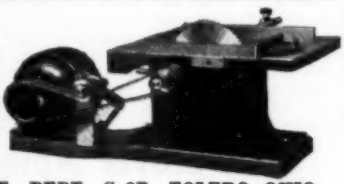
ELECTRIC WHEEL CO., 23 Elm Street, Quincy, Ill.

IT'S EASY TO BUILD THINGS

When your ripping, cross-cutting, mitering, rabbetting, sanding, grinding, and many other operations are done on a

BOICE-CRANE HANDISAW

All metal construction. Accurate. Made in three sizes to meet every requirement. Saws 2½" stock. Dadoes 5/8"x5/8". Cuts 5/8" moulding. Driven by any ¼ to ½ h. p. motor attached to light socket. Portable. Put on any bench. Priced surprisingly low. Write for 64-page booklet describing Boice-Crane Handisaws, Bench Band Saws, Lathes, Jointers and jig saws.



W. & J. BOICE, DEPT. G 2B, TOLEDO, OHIO.

Root
QUALITY
BEE SUPPLIES

are everywhere

Perhaps you would like to know more about the good qualities of Root Bee Supplies. Perhaps you are wondering why the sales of Three-ply Airco Foundation have doubled each year; why Root Sections are the strongest sections on the market today; why the Food-chamber Hive gives such exceptional results, and why the Simplicity Extractor is the most-talked-of extractor today. Root dealers, large and small, can give you first-hand information and the reasons why Root's Bee Supplies are the best. You are invited to write or visit our dealers, some of whose names appear below.

--- Root Bee Supply Agencies ---

Otto Schwill & Co.,
10-12 S. Front St., Memphis, Tenn.

O. G. Rawson,
3208 Forest Place, East St. Louis, Ill.

M. H. Hunt & Son,
510 N. Cedar St., Lansing, Mich.

C. H. W. Weber & Co.,
2163-7 Central Ave., Cincinnati, Ohio.

The A. I. Root Company,
873 Mass. Ave., Indianapolis, Ind.

A. I. Root Co. of Syracuse,
1631 W. Genesee St., Syracuse, N. Y.

The A. I. Root Company,
121 Central Ave., Leonia, N. J.

A. M. Moore,
22½ S. Third St., Zanesville, Ohio.

North Dakota Bee Supply Co.,
Moorhead, Minn.

A. I. Root Co. of Chicago,
224 W. Huron St., Chicago, Ill.

A. I. Root Co. of Norfolk,
7 Commerce St., Norfolk, Va.

A. I. Root Co. of Philadelphia,
10 Vine St., Philadelphia, Pa.

F. A. Martiny,
2824 Magazine St., New Orleans, La.

Mason Bee Supply Co.,
Mechanic Falls, Maine.

A. I. Root Co. of St. Paul,
290 E. Sixth St., St. Paul, Minn.

J. M. Stewart & Co.,
Indiana, Pa.

F. E. Burgess,
305 N. Elm St., Warren, Ohio.

Rawlings Implement Co.,
9-11 W. Pratt St., Baltimore, Md.

F. Coombs & Son,
Brattleboro, Vt.

F. D. Manchester,
R. D. No. 2, Middlebury, Vt.

W. M. Baldwin,
24 N. Erie St., Toledo, Ohio.

Wilson & Wilson,
206 E. Jefferson St., Louisville, Ky.

The I. W. Scott Co.,
500 Liberty Ave., Pittsburgh, Pa.

Schenectady Bee Supply Co.,
Schenectady, N. Y.

Zack Davis Company,
Delaware, Ohio.

A. W. Yates,
3 Chapman St., Hartford, Conn.

Dr. F. A. Young,
235 N. Canal St., Delphos, Ohio.

The A. I. Root Company, Medina, Ohio

Queen Talks

By M. J. DEYELL, Apiarist.

THE VALUE OF QUEENS THAT PRODUCE DISEASE-RESISTANT BEES.

(Talk No. 5.)

Some strains of bees quite easily succumb to diseases of brood and adult bees, while others show a marked degree of resistance to disease.

Up-to-date honey producers everywhere are waking up to the importance of keeping bees that are resistant to disease, because disease-resistant bees are more productive and help to make beekeeping more profitable. This is especially true in regions where European foul brood is prevalent.

A strain of bees possessing the quality of disease-resistance in a marked degree is largely the result of selective queen-breeding. During our many years' experience in the selective breeding of three-banded Italian Root QUALITY queens, we have constantly had in mind this important quality of resistance to brood and bee diseases.

The value of queens that produce disease-resistant bees cannot be overestimated.

Should you be interested in Root QUALITY Queens and package bees for spring delivery write for our free booklet, "Combless Package Bees," which fully explains how to obtain maximum results, also our leaflet, "How to Take Care of a Shipment of Bees in Root Bee-Shipping Cages," also leaflet of prices.

The A. I. Root Company
MEDINA, OHIO

HONEY PAILS

MANUFACTURERS OF
"BLOSSOM-SWEET"
AND
BADGER BRAND
5 and 10 lb. Honey Pails.

We specialize in 5 and 10 lb. round pails and 60 lb. square cans. Plain and Lithographed cans of all descriptions.

WILKES-BARRE CAN CO.
ESTABLISHED 1856
WILKES-BARRE, PENNA.

SOUR HONEY DEPT.

(Continued from page 122.)

worker egg gets backed round into a queen egg, for there aint no reason in havin to change forty or fifty thousand queen eggs back into worker eggs when the other way only one worker egg has to be backed round into a queen egg.

Oh, how they did haul each other over the coals verbal and called each other highbrows and lowbrows and worse and was gettin hotter continuous when I steps in and says praps the good Lord knows more about this than anybody else except Doc Phillips and Geo. Demuth and Jim Hambleton, so why not let him run it awhile longer as he wants to and not have to tell you all about it either? So they put their coats back on, and I was feelin good and happy for the first time since the early evenin of openin night of coon season, Nov. 15, 1925. I heard later as how they went back to Root's office and got Demuth and Ernie Root and Jack Deyell into the argament with em and finally telephoned for Mel Pritchard to drive in quick from his place and settle it if he could, and Mel came and got in a fight verbal with all of 'em put together and told 'em none of 'em knew what they was talkin about but he knew all about it and explained his new theory on egg-

(Continued on page 126.)

A Few Facts

that every buyer of package bees should know before placing his order.

Will you get them on time for the honey flow, or when promised to be shipped? Will you get your money's worth for what you PAID? Will you get young queens and strong package bees? Our 16th year in the package and queen game has solved the above.

We aim to make prompt shipments or return your money. We only book to 75 per cent of our capacity.

All bees shipped on a frame natural food for bees in transit:

10	3-lb. with select untested queens..	$ 45.00
25	3-lb. with select untested queen..	108.75
50	3-lb. with select untested queens..	212.50
100	3-lb. with select untested queens..	400.00
10	4-lb. with select untested queens..	$ 52.50
25	4-lb. with select untested queens..	127.50
50	4-lb. with select untested queens..	250.00
100	4-lb. with select untested queens..	475.00

5-lb. on two frames with select queen, $6.50 each package. Now booking orders for shipment after April 15th. 15 per cent with order, balance at shipping time.

We furnish health certificate and guarantee safe delivery.

Central Louisiana Apiaries
OSCAR MAYEAUX, Proprietor.
Hamburg, Louisiana

Baby Bees WITH THEIR LIVES BEFORE THEM

We have found the most of our customers do not want the cheapest package of bees that we can produce for them, but the best, as the results of their efforts depend on what the packages accomplish for them; and they all agree that they can well afford to pay the difference in price, so we are producing Baby Bees for our customers and giving them added service instead of reducing our price.

FOR BEST RESULTS YOUR REQUIREMENTS ARE:

FINANCIAL RESPONSIBILITY FOR YOUR MONEY, RECEIVE YOUR BEES WHEN YOU WANT THEM, BEES TO ARRIVE IN GOOD CONDITION, YOUNG BABY BEES SO THE LITTLE SWARM WON'T SOON DWINDLE, GOOD YOUNG QUEENS.
Our customers claim if they can get this they can afford to pay a fair price, and we believe you will agree that our prices are as low as it is possible to make them and maintain quality and service which you must have to obtain a good crop.

SEND FOR OUR 20-PAGE ILLUSTRATED CIRCULAR

PRICES

TWO-POUND PACKAGES WITH QUEENS

1	5	10	25	50	100
$4.25	$4.00	$3.75	$3.65	$3.50	$3.35

THREE-POUND PACKAGES WITH QUEENS

1	5	10	25	50	100
$5.25	$5.00	$4.75	$4.65	$4.50	$4.35

The Stover Apiaries

Tel. Sta. and Ship. Point, Mayhew, Miss. Tibbee Station, Miss.

4% BANKING BY MAIL

WHEREVER YOU LIVE

you will appreciate this bank's service, and the convenience of MAILING YOUR DEPOSITS. 4 per cent interest paid.

THE HOME OF THE HONEY BEE

THE SAVINGS DEPOSIT BANK CO. MEDINA OHIO.

E. B. SPITZER, PRES. E. R. ROOT, VICE PRES. H. E. AYLARD, CASHIER

You can have cash for your wax and old combs or cappings at the market price, or we will allow a little more in exchange for supplies.
Write for our terms and prices

"Falcon"

Supplies--Queens--Foundation

W. T. Falconer Mfg. Company

Falconer, New York (near Jamestown)

"Where the best beehives come from."

Ask for catalog. Booklet, "Simplified Beekeeping for Beginners," free.

Knight's Bees and Queens

PURE THREE-BANDED LEATHER-COLORED ITALIANS, GENTLE AND THE BEST HONEY-GATHERERS.

Shipments begin April 1st. Delivered prices, transportation prepaid by me, express or parcel post:

1-lb. pkg., including select young laying queen, $3.50. 2-lb. package including select young laying queen, $5.25. 3-lb. package including select young laying queen, $6.25. 10 or more packages, either size, 25c per package less. If queenless package is wanted for strengthening weak colonies, deduct $1.25 per package.

Queens

Select young laying queens, guaranteed mated to pure Italian drones, $1.25 each; five for $5.50; ten or more, $1.00 each. Select tested queens, $2.00.

Ten per cent cash to book your order, balance when you advise to ship. I ship on the day you name. There is satisfaction in knowing your bees and queens will arrive on time. Should you find a queenless colony this spring, send to me for a young queen to save them. I will not disappoint you. No disease. Health certificate with each shipment. My customers are satisfied, and are numbered by the thousands. Safe arrival and perfect satisfaction guaranteed.

JASPER KNIGHT
HAYNEVILLE, ALABAMA.

Phelps Famous Golden Queens

Forty-five years of production, elimination, and selection has evolved a strain of queens as good as any, excelled by none. **GENTLE, PROLIFIC, HONEY-GATHERERS.**

Untested, $2 each, six for $10; $18.00 a dozen. Tested, $5 each. Breeders, $10 and $20.

TRY THEM

C. W. PHELPS & SON
BINGHAMTON, N. Y.

SOUR HONEY DEPT.

(Continued from page 124.)

ology. Mel aint been into the office since and says he won't ever be, and Rea and Cary wouldn't ride out of town together on the same train. I agree complete with Mel as regardin one thing he says as per above, and I am more than full satisfied with the general results of the whole argament. It made a break in the surroundin gloom for me.

* * *

I have another world revolutionizin bee discovery as will throttle foul brood thruout America, Europe, Africa, and Ashy and other places. It is so great a discovery as to take up all the space of this dept. in one issue of Gleanins, but I thought the bee egg argament as per above ought to be given to a waitin world first for its full understandin of bee eggs, and also to give Dr. Hutzelman a fair show to sell out his solushun manufacturin equipment and alcohol stock afore I give free to the beekeepin world their greatest boone and to foul brood its death nell for allays.

* * *

Ernie Root's slab pile is just as was.

* * *

I aint got up the courage as yet to writin details for errin husbands as to

(Continued on page 128.)

Advertising

may induce a first sale, but quality and service alone draw permanent patronage.

ITALIAN BEES FOR 1926
AS GOOD AS THE BEST

Combless packages, nuclei, and queens. Special low prices to those who act now; time limited. A saving you can not afford to pass up, ample time to get in on this offer by writing now. A square deal and satisfaction guaranteed. Particulars by return mail.

York Bee Company
H. F. York. Jesup, Georgia.

Book Your Orders Now for Package Bees

Safe Arrival Guaranteed. Free Circular

Two-Pound Package Bees, $2.50. **Young Queens (1926) $1.00.**

The Loveitt Honey Co., 602 N. 9th Ave., Phoenix, Ariz.

JENSEN'S APIARIES

Do put bees through in A-1 shape. Past two seasons without claim for a single package. While you are resting this winter and making plans for the coming season, we are busy getting ready for the spring rush. Try us; we don't go to sleep on the job. Volume makes possible our new low prices. Quality same as formerly, and we are not ashamed of any queen or package of bees ever sent out. Send for our descriptive folder, free for the asking. 10 per cent books your order now (balance just before shipping) and assures you of shipping date.

THREE-BANDED ITALIANS ONLY

2 lbs. Italian bees with untested queen, $3.50, 25 or more packages, each, $3.00.

3 lbs. Italian bees with untested queen, $4.50. 25 or more packages, each, $4.00.

Two and three frame nuclei with young tested queens each $4.50 and $5.50 respectively, 25 or more, deduct 50c each. Health certificate with every shipment.

QUEENS, "OUR PRIDE"

One grade of untested only; the best we know how to produce. 1-10, each, $1.10; 11-25, each, $1.00; 26-50, each, 90c; 51-100, each, 80c. All over 100, 75c each. Write for early order discounts. Tested queens, $1.50 each. Breeders, none better, $5.00.

JENSEN'S APIARIES
CRAWFORD, MISS.

Read This

Last year was my first year to offer Bees and Queens to the public, and I am pleased to announce that I did not receive the slightest complaint from a dissatisfied customer.

This success was made possible by several years' careful study and experience with some of the most extensive queen-breeders over the South.

You may expect the same Standard of Quality and Service again this year. Write for circular and price list.

John C. Hogg
RAMER, ALABAMA.

Thriftiness

is the quality that makes Forehand's Three Bands **surpassed by none, but superior to many.**

THRIFTINESS is the result of 34 years work and study among the bees.

THRIFTINESS is the quality that will help you increase 1926 profits.

Today our THRIFTY bees are pleasing hundreds of America's best beekeepers. THRIFTY bees are guaranteed to please you.

Let us quote you our attractive prices on package bees for spring delivery. We offer a special discount during February.

W. J. Forehand & Sons
FORT DEPOSIT, ALABAMA.

To Our Beekeeper Friends

We have wintered over a limited number of very choice selected tested large pure golden queens. We offer same at very reasonable prices to the beginners who wish very gentle and beautiful queens and bees, also to the large beekeepers who wish to improve their strain. Good honey-gatherers by being large bees.

Two-pound package with a one-frame nucleus of beautiful yellow bees and breeding queen all for only $6.00 each; ten or more only $5.00 each.

Three-pound package with a one-frame nucleus and queen all for only $7.00 each; ten or more, only $5.95 each.

Queens only $3.00.

Each nucleus equals a pound of bees. As each package contains a one-frame nucleus, you receive something like an extra pound of bees with each package free.

Selected untested queens, daughters of our breeding queens, if wanted instead, deduct $1 off each package; 25 or more, 6 per cent off additional.

Three-banded leather-colored, same grade, same price.

Safe arrival and no diseases guaranteed. Bees sure to please; highest value received for money invested. References furnished. Write or wire promptly. Will not accept more orders than we can properly fill.

The Louisiana Modern Apiaries
BUNKIE, LOUISIANA.

WHITESBOG
BLUEBERRIES
Actual Size
A new cultivated fruit

BIG profits for the commercial grower and a delightful fruit for the amateur. Berries grow over one-half inch in diameter. Delicious. Practically seedless. *All varieties carefully selected, tested and named.* Bushes vigorous and heavily productive. Write for information.

WHITESBOG
BLUEBERRY NURSERIES
Headquarters for Purebred Blueberry Plants
JOSEPH J. WHITE, INC.
Box X Whitesbog, N. J.

VICK'S GARDEN & FLORAL GUIDE for 1926 FREE
Is now ready

For 77 years a recognized authority on vegetable, flower and farm seeds. Lists the best of the old and many new varieties and tells how to grow them.
Send a post-card for your copy today.
America's first catalog seed house
JAMES VICK'S SONS Rochester, N. Y.
33 Stone Street The Flower City

ROSES
of New Castle

Are the hardiest, sturdiest, freest blooming rose plants in America. Grown on their own roots in the fertile soil of New Castle. We give you the benefit of a lifetime experience and the most select list in America. Our stock also includes Cannas, Geraniums, Chrysanthemums, Dahlias, Phlox, Peonies, Ferns, Gladioli, Cyclamen, Perennials and Hardy Shrubs.

Our rose book for 1926, ROSES OF NEW CASTLE, tells you how to make rose growing a success. Published and elaborately printed in actual colors. Send for your copy today—a postal will do. Address

Heller Bros. Co., Box 218, New Castle, Ind.

SOUR HONEY DEPT.

(Continued from page 126.)

events subsequent to my good wife's discoverin the absence in Ab's hay mow of the surplus honey she had sold. It may take a year.

* * *

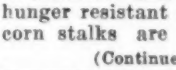
Nor I aint secured no financial partner yet in black fox farmin. Some day and soon to some banker or some other real finanseer will see this big opportunity to go pardners with me in fox farmin and then old Byer of Canady will wish he hadn't gone back on the terms I accepted off him. Any way, dont buy a single fox off old Byer if you have to go without a black fox allays.

* * *

Nothin was ever goin on so triumphin or smoother and slicker than my winter-hunger resistant strain development. The corn stalks are layin right there Eli

(Continued on page 130.)

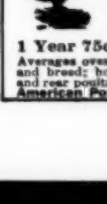
The QUALITY BASKET



The Berlin Quart
That secures highest prices for your fruit. Write for 1926 price list showing our complete line, and secure your baskets and crates at WINTER DISCOUNTS.
The Berlin Fruit Box Co.
Berlin Heights, Ohio

STRAWBERRY PLANTS
Strong, healthy, tremendous bearing stock. World's greatest new everbearing strawberry **MASTODON**
GRAPE PLANTS
Large supply at low prices.
FRUIT TREES
Apple, peach, plum. All hardy northern grown. Full line of Blackberries, Raspberries, Currants. Mary Washington asparagus at $10.00 per 1000. All at wholesale prices for finest plants grown. **Free Catalog.** Write today.
F. C. STAHELIN & SON, Box 12, Bridgman, Mich.

Best Poultry Paper
Showing Champions in all Breeds and Full Page Art Chicken Pictures, natural colors, suitable for framing, FREE with several issues during year.
3 Months' Trial US 1c stamps accepted **15c**
Monthly 80 to 120 pages. Practical articles by foremost poultrymen.
1 yr. $1; 2 yrs. $1.50; 3 yrs. $2.
Poultry Tribune, Dept. 19 Mt. Morris, Ill.



American Poultry Journal
Oldest, Largest and Best
3 MONTHS FREE
All **ONE, TWO** or **FIVE** year subscriptions received before Dec. 31st will be entered to commence with the January issue, and the Oct., Nov. and Dec. issues of this year will be mailed **FREE.** Order today and get them.
1 Year 75c. 2 YEARS $1 5 Years $2.00
Averages over 100 pages per issue. Tells how to feed, house and breed; how to secure high egg production; how to hatch and rear poultry successfully. 4 months trial subscription 25c.
American Poultry Journal, 2325 Plymouth Ct., Chicago

KILL WEEDS THIS QUICK EASY WAY--MULCH SOIL

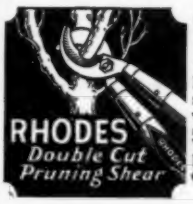
Thousands of practical gardeners everywhere now use the **BARKER** to kill the weeds and make the level dust mulch which they know is so vital to the growth of plants. The rotary blades, working in combination with the underground knife, cut the weeds, shake the dirt off, and turn the roots up. "Best Weed-Killer Ever Used." **In the same operation,** they break up the clods and surface crust and spread this finely worked soil evenly. Mix and aerate the soil without disturbing nature's method of packing around the roots. Guards protect the leaves. You work a strip 6 to 12 inches wide, at a fast walk. A great time and labor saver.

"The BARKER is miles ahead of them all," says Wilbert Kelly, **Reading,** Pa. "Sure is death on weeds," Henry Christensen, Council Bluffs, Ia. "Worth all the rest combined," J. A. Musson, Bainbridge, N. Y.

WRITE FOR FREE BOOK

It will pay you to investigate. Our free book illustrates the BARKER and its work, gives sizes, prices, delivered to your station, etc. Write for it and Special Factory-to-User offer.

BARKER MFG. CO., BOX 116, DAVID CITY, NEBR.



Cuts both sides of limb-- ***Does not bruise bark***

Most powerful pruners made. Used throughout world. All styles, all sizes. Shipped postpaid. Write for booklet. Rhodes Mfg. Company, Grand Rapids, Mich. 328 S. Division Ave.

BOLENS **Garden Tractor**

Does seeding, Cultivating and Lawn Mowing with great saving of time and effort. All it needs is a guiding hand. Gasoline power does the work. Attachments for different jobs are instantly interchangeable. Many indispensible features, patented arched axle, tool control, power turn, etc. A boy or girl will run it with delight. Write GILSON MFG. CO., 823 Park St. Port Washington Wis

KITSELMAN FENCE

"I Saved $18.00," says J. T. Wasson, De-Soto, Ill. **You, too, can save** by buying direct at Lowest Factory Prices. **WE PAY THE FREIGHT.** Write today for Free Catalog of Farm, Poultry and Lawn Fence, Gates, Steel Posts and Barbed Wire.

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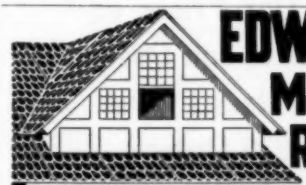
CHICKS **$10 Per 100 BOOKS ORDER**

Balance few days before shipping. Our **low prices** are causing a sensation. 12 kinds. ACCREDITED. **Big, instructive, illustrated catalog free.**

Colonial Poultry Farms Box 914 Pleasant Hill, Mo.



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EDWARDS "REG" METAL SHINGLES look good, outlast three ordinary roofs. No painting or repairs. Guaranteed fire-proof, rust-proof, lightning-proof. Easy to put on. We also sell V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, **Ready-Made Steel Garages, Farm Buildings, etc.**

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By buying direct from us you save money, get better value. We are the largest manufacturers of metal roofing in the world. Thousands of satisfied customers every year are our best advertisement.

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THE EDWARDS MFG. CO.
243-283 Butler St.
Cincinnati, Ohio

SOUR HONEY DEPT.

(Continued from page 128.)

and not a single buzz out of them bees. Compleat winter quiessants as Geo. Demuth is yappin about so much.

* * *

I won't accept no more Christmas presents after Feb. 1. You as aint sent has lost that opportunity forever or leastwise till Dec. 25, 1926.

OLD DRONE.

P. S.—Ab's and my financial aint improved none by workin, for our wives are usin our wages to pay bills past currant just as well as currant. Its payin past currant as I feel worst of all about and as what isnt gettin you nothin now nor nothin after now.

MAYEUX'S PURE-BRED QUEENS AND BEES

Shipped on comb or combless. Guarantee safe delivery. Early shipment if desired. In two, three, four, and five pound packages.

One two-pound package.....$ 4.25
Ten two-pound packages.... 38.00
25 two-pound packages..... 85.00

Write for prices on larger lots. 10 per cent with order required.

H. J. MAYEUX
METARIE RIDGE, JEFFERSON PARISH, LA.
BOX 65 C. C.

Beekeepers

Get Our Prices on Package Bees and Queens before Placing Your 1926 Order

We are prepared to give prompt service. Queen output will be about 400 queens per day after April 1. Let us quote you delivered prices by mail or express. Bees inspected, no bee disease here.

Citronelle Apiaries
CITRONELLE, ALABAMA

GOOD SEEDS
Grown From Select Stock —None Better— 56 years selling good seeds to satisfied customers. Prices below all others. Extra lot free in all orders I fill. **Big free catalogue** has over 700 pictures of vegetables and flowers. Send your and neighbors' addresses.
R. H. SHUMWAY, Rockford, Ill.

Italian Bees

Honey Girl Strain

We take this opportunity to thank our customers for their valued orders the past season.

The value of orders delivered during the season of 1925 was double the value of orders delivered in 1924. Besides these large deliveries we had to return orders for hundreds of packages. This heavy demand for our Honey Girl Bees and Queens is our best recommendation.

We increased our apiaries and added to our equipment to enable us to make larger and earlier deliveries this year.

We are now breeding from the progeny of two of the best queen daughters of St. Romain's Honey Girl that were tested for queen mothers. One, Conrad's Honey Girl, a record honey-producer for two seasons and average producer the third. As a queen mother we consider this queen a close second to her mother. The other, 20-comb Honey Girl, a queen that developed to an unusual egg-producing capacity, and had twenty standard Hoffman frames practically filled with brood. One queen daughter of this breeding queen developed to same capacity. Her progeny are wonderful honey-producers.

We are wintering several hundred pedigreed, selected queens. There should be many choice breeding queens in this lot. The best at $10.00 each; second grade at $8.00 each; shipped by express with two-pound combless package or with nucleus of one frame brood—one pound bees.

Package bees shipped combless with candy made with inverted sugar syrup, or on comb with natural stores as desired or as required by your state law. All comb shipments certified free from diseases by State Certificate of Inspection. Loss or damage in transit replaced promptly on receipt of express bad order delivery receipt with proper notation, which should be mailed to us immediately. All prices quoted F. O. B. our shipping point.

These prices include an untested Honey Girl Queen with each package.

	1	10	50	100
3-lb. package...	$4.50	$42.50	$205.00	$400.00
4-lb. package...	5.40	51.50	250.00	490.00

To secure order in advance send 20 per cent of purchase price with first letter, balance to reach us fifteen days prior to date order is booked for shipment. For order amounting to more than $500.00 send deposit of $100.00 with order, balance as above.

Honey Girl Apiaries
Hamburg, Louisiana

Townsend's Bulletin No. 25

Townsend & Comos, Breeders of "ARISTOCRAT" (Shaw Foundation) strain of three-banded Italians. Bees with a reputation. Not Goldens, or five-banded stock, just plain three-banded Italians in their purity. Originated forty years ago by Dr. J. P. H. Shaw, of whom we are successors, owning all the breeding stock handed down these years. Original breeding-queens imported by the doctor and line-bred all these years, making a line of breeding likely never heard of before. From this fine evenly bred stock our "Aristocrat" strain of three-banded Italians was developed. Listen to our practice, then you will readily see why this Aristocrat stock should be very superior! While nearly every colony and nucleus in our breeding yards are pure and good stock, we want the very best only to breed from, so any swarms not quite up to our standard of quality, will be moved to an isolated location, and there Italianized and tested before brought back to our breeding yards. With this method we even expect to improve this wonderful strain from year to year, and the beekeeping public will benefit by it. Very gentle (no veil necessary in handling these bees) and good honey-gatherers, as we have proven by testing out several hundred in our yards at Northstar, Mich.

I have been selling this fine breeding stock very cheap during the three seasons under my management, and it has been hinted in previous bulletins that this low price was an introductory one, and eventually the price of this fine breeding stock must advance something toward its real worth, and this season a small advance in price will be asked for our very best stock. We quote for May or later delivery as follows:

Extra Super X Breeding queens at	$25.00 ea.
Super X Breeding queens at	15.00 ea.
XXX Breeding queens at	10.00 ea.
XX Breeding queens at	8.00 ea.
X Breeding queens at	6.00 ea.
Select Tested queens at	5.00 ea.

About these queens: If you are exacting, or breeding for the market, you should select one of the better grades of queens listed above, for they will produce fine queens and will be selected for three-banded drones as well as workers, showing the best of breeding. If you should decide one of the lower-priced queens will answer your purpose, we promise you your money's worth, no matter which grade you select. We will ship any of the four better grades of queens mentioned above, in a nucleus by express on a comb of brood, so there will be no chance of losing a valuable queen by introduction. We guarantee safe delivery. Good health certificate with each queen by express. There has never been disease nearer than 100 miles of Loreauville.

We will furnish a 2-frame nucleus by express, with a $5.00 Tested Aristocrat queen for the price of the queen, $5.00 each, but you will be required to make your order not less than ten nuclei.

With Untested queens, one dollar less, in lots of ten or more nuclei. Twenty per cent will book your order. E. D. Townsend, sales manager, J. P. Comos, queen-breeder and part owner. Address Townsend & Comos, Loreauville, La., "Where the good queens come from."

Package Bees and Queens for 1926

Three-band Italians. The gentle, hardy, prolific kind, that gets the honey. 900 colonies to draw from, 1000 nuclei. We have thousands of satisfied customers throughout the States and Canada, and not one complaint has been made to bee journals during the six years we have been in business. We have been in the bee business for thirty-five years. Our losses last season were less than two per cent. We guarantee safe delivery, freedom from disease, and satisfaction, the purchaser to be the judge. Let us quote prices on your needs for the coming season.

J. M. Cutts & Son
R. F. D. 1, Montgomery, Ala.

Achord Bees and Queens for 1926

Shipments start April 20th. Order now to secure early shipping dates. Pure three-banded Italians only.

2-lb. pkg. with select young laying queen	$4.75
Five 2-lb. packages	22.50
Twenty-five 2-lb. packages	112.50
5-lb. pkg. with select young laying queen	5.75
Five 3-lb. packages	27.50
Twenty-five 3-lb. packages	137.50

Express charges collect at destination. Safe arrival guaranteed. Inspection certificate and all necessary papers to carry packages through without delay. If packages are wanted by parcel post, add 15c and postage to the price of each. We will advise you cost of postage to your postoffice. If wanted without the queens, deduct $1.00 from the price of each package.

Queens

Select young laying queens, $1.00 each, any number. Tested queens, $1.75 each, any number.

Terms, 20 per cent with order, balance a few days before shipment. No bees sent C. O. D. Producing and shipping package bees and queens has been our sole business for many years. We have passed the costly and dangerous experimntal stage. Your order placed here brings highest value for the money invested. For complete information send for latest price price.

W. D. ACHORD, Fitzpatrick, Ala.

$500 to $1200 per acre from KELLOGG Strawberries

F. E. BEATTY, Pres.

This FREE BOOK tells how to grow them

Here is my brand new Berry Book that tells you how to make $500 to $1,200 per acre from Strawberries grown the "Kellogg Way." This may seem like a lot of money to get from a single acre in one year, but it is easy to mako these big profits when you have the right plants and the right method of growing them. More than 100,000 growers are making these profits the "Kellogg Way." Here's the proof.

H. M. Hansen, Wisconsin, says—"You have my permission to make your claims even stronger because my returns from Kellogg berries show better than $1,400 per acre."

"From only one acre of Strawberries grown the 'Kellogg Way' I made $1,800 last year." —W. L. Tilliston, Vermont.

E. D. Andrews of Michigan fully paid for his $4,000 home from the profits off 2 acres of Kellogg's Thorobreds.

W. R. Randall of Illinois made at the rate of $1,900 per acre, and Jacob S. Rodgers of Pennsylvania picked 8,500 quarts off one acre, which brought $1,700.

One Acre of Kellogg Strawberries Will Make More Money Than 40 Acres of Common Crops

Big Crops of Berries and big profits come easy when you know how. I spent 30 years learning how to make berry plants produce these big money crops. This very berry book I send you **FREE** tells the whole story. In one hour with this book you can learn what it has taken me 30 years to learn. Send for it—read it and see how thousands are making these profits from Kellogg Strawberries. It's the finest Berry Book ever produced—also tells how to get big crops of Raspberries, Blackberries and Grapes. This book is **FREE**—just send a post card.

R. M. Kellogg Co., Box 2623, Three Rivers, Mich.